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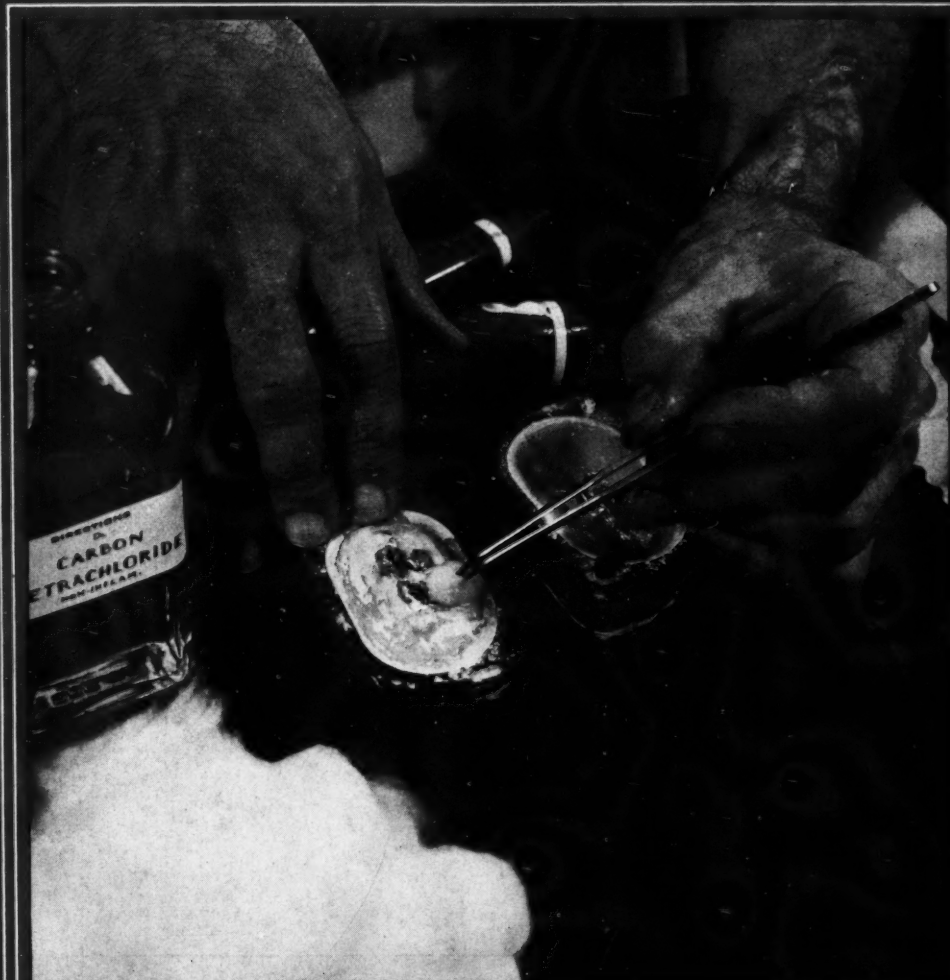
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THE D E N T A L

Digest

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JANUARY, 1942

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PHILADELPHIA, PA., U.S.A.

THE D E N T A L *Digest*

VOL. 48

NO. 1

JANUARY, 1942

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708 Church Street, Evanston, Illinois

LEVON M. SAGHIRIAN, D.D.S. (University of Pennsylvania, 1924) will be recalled by DIGEST readers as the author of an article on anesthesia and two previous articles on electro-surgery, the last in September, 1940. His present article describes electrosurgical correction of low frenum and oral tissue bands. Doctor Saghirian is a general practitioner with a particular interest in oral surgery.

OTTO MEYER, M.D. is the author of more than forty articles published in medical journals and the author of two books: one on RHEUMATISM, the other, PHLEBITIS. In June, 1940, Doctor Meyer described for THE DIGEST: THE MECHANISM OF ORAL FOCAL INFECTION. He was a member of the presiding committee of the Fourth International Rheumatism Congress. Phlebology is the particular phase of medical practice in which he is interested. A NEW APPROACH TO OLD DISEASES, a book on focal infection, is being published by Savoy Publishing Company this month.

GEORGE A. SWENDIMAN, D.D.S. (Northwestern University Dental School, 1913) is a

About Our CONTRIBUTORS

previous DIGEST writer (Caries of Unerupted Teeth, August, 1940) and is the author of a book on DENTAL HEALTH which was published in Boston in 1930 by the Stratford Company. Doctor Swendiman has a general practice, and this month suggests a way of maintaining interproximal contact in the treatment of periodontal disease.

MOSES AARON LEVY, D.D.S. was graduated from the University of Pennsylvania in June, 1926. Doctor Levy is a general practitioner who suggests in this issue a direct method for making direct wax patterns for large restorations.

JOSEF NOVITZKY, D.D.S. (University of California College of Dentistry) in 1940

completed fifty years' time spent in a dental office, although not always as a dentist, having begun his career as an office boy in a dental office in San Francisco. Four years' surgical experience at Lane Hospital, San Francisco in Stanley Stillman's service and three years spent in the Division of Surgical Pathology of the Medical Department of Leland Stanford University established a well-grounded medical and dental knowledge which has enabled Doctor Novitzky to write with authority on such subjects as AN EVALUATION OF THERMAL THERAPY which appeared in our May, 1941 number, and LUDWIG'S INDURATIONS which appears in this issue.

LEON M. GECKER received his D.D.S. at Columbia University College of Dental and Oral Surgery. Doctor Gecker has a general practice with attention to orthodontia. He is also clinical chief of staff at the Grand Street Settlement, New York City. In September of last year he described for us A SUPPLEMENTARY X-RAY PROCESSING TECHNIQUE.

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Electrosurgical Correction of Low Frenum and Oral Tissue Bands

LEVON M. SAGHIRIAN, D.D.S., Philadelphia

FRENA AND TISSUE bands of low attachments, causing functional disturbances and often esthetically objectionable, may be considered abnormal, solely from the clinical standpoint.

Histologically, these bands consist of dense white connective tissue fibers, covered with mucous membrane and lined by squamous epithelium. They constitute buccally the attachments of the mucosa of the cheek, whereas anteriorly, they are commonly known as the maxillary, mandibular, and lingual frena. They have the minor and indirect physiologic function of stabilizing the orbicularis oris muscle. Normally attached about 1 cm. away from the crest of the alveolar ridge, it is not uncommon to find these bands, and the maxillary frenum in particular, situated directly over or passing the crest of the alveolar ridge. This is more obviously noted when the tissues are retracted by hand. When such a situation exists, certain orthodontic and prosthetic problems arise, which may necessitate functional therapy through surgical intervention.

The over-extended and hypertrophied frenum may be an etiologic factor in incisal diastema. The condition is noticed mostly in children, but it often persists into adult life and creates an unsightly appearance. In reviewing the literature it is evident that two schools of thought are found concerning its correction, one group contending that through orthodontic treatment alone, it is possible to create pressure atrophy of the interproximal tissues. They consider surgical intervention objectionable on the assumption that scar tissue formation may cause further complications. In a survey of 516 grade school and 1067 high school pupils, Taylor,¹ agreeing with Mereshon and Lewis, comes to the conclusion that it is normal for young children to have maxil-

¹Taylor, J. E.: Clinical Observations on Normal and Abnormal Frenum Labii Superioris, *Am. J. Ortho. & Oral Surg.* 25:646 (July) 1939.

DIGEST

The electrosurgical technique is particularly applicable to the correction of frena and low soft tissue bands, for the removal of hypertrophied and hyperplastic tissues, and the resection of flabby alveolar ridges. These corrections tend to overcome mechanical difficulties and improve the appearance without limiting the functions of the lips or changing the expression. The technique is simple but must be cultivated by experience.

Of equal importance is the use of a high frequency current of the proper wave length, current characteristics, and voltage. It is desirable to have two separate circuits on the same electrosurgical unit, one a fast-cutting current of long wave length for low coagulating, and another current of shorter wave length to be used for deep coagulating.

Cutting is to be executed deliberately and with rapidity, without desiccation or undue over-coagulation.

lary diastema, which Nature seems to correct in later life. A second school of thought favors early and complete surgical resection of the dense fibrous interproximal septum, prior to successful orthodontic treatment.

Surgical mouth preparation is at times advocated in the edentulous mouth. Flabby and movable ridges resulting from excessive bone resorption and consequent recession, often with a history of advanced paradontosis preceding extractions, make the proper adaptation of dentures difficult. Low tissue attachments also create further complications in prosthetic design. Surgical mouth preparation when indicated may be performed by either of two methods, under appropriate anesthesia: (1) the standard surgical technique with the use of sharp cutting instruments; (2) the electrosurgical technique with the use of high frequency cutting current through suitable electrodes.

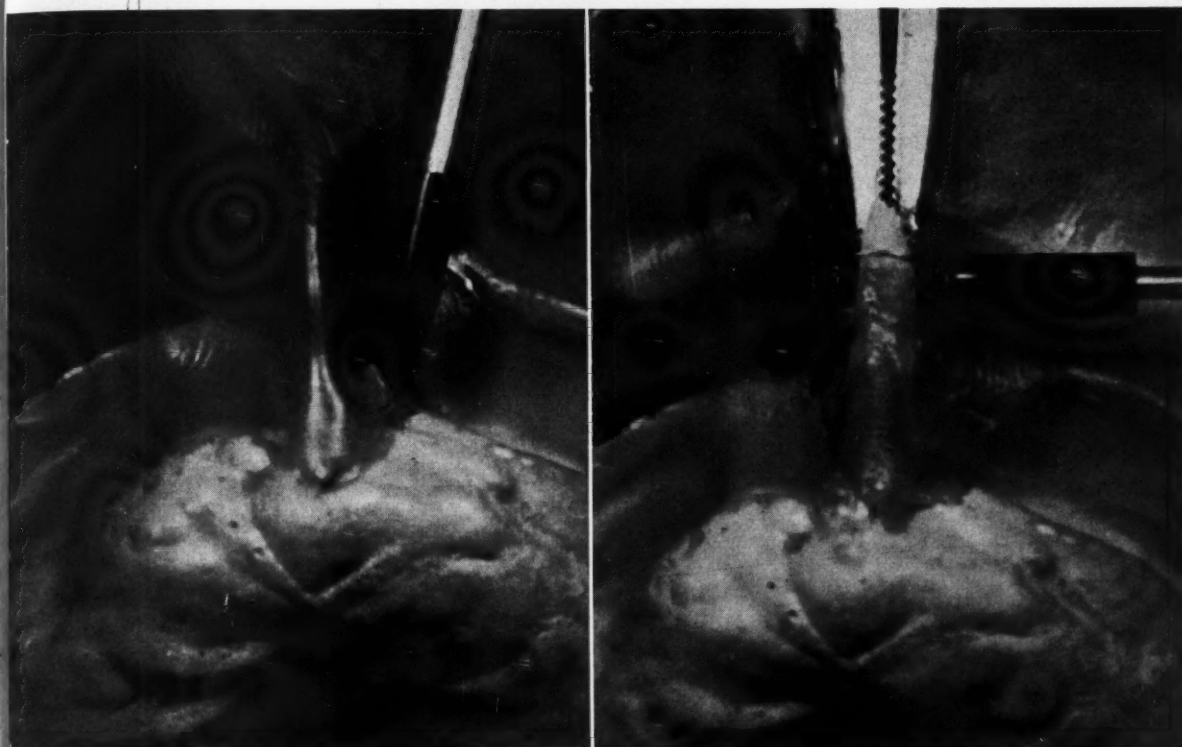
The Surgical Technique

The procedure in the correction of the low frenum or tissue bands is similar to that used in general surgery for the reduction of tension of scar tissue bands and adhesions. The Y-V operation is described by Parker² and is the accepted technique. Briefly, incisions are made on each side of the frenum, a V being marked. The frenum is freed and removed from its upper attachment with sharp shears. The upper section of the frenum is sutured at a higher level. At conclusion the incisions take the form of the letter Y.

Cutting across a band of connective tissue will not produce satisfactory results inasmuch as subsequent contraction of scar tissue tends to return it to the former status. The use of sharp scalpels and close approximation of tissues will minimize the formation of

²Parker, Douglas: Surgical Consideration of Abnormal Frena, *Internat. J. Ortho. & Oral Surg.* 23:1141 (November) 1937.

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Figs. 1 and 2—Electrosurgical correction of low frenum demonstrated on wax model. Fig. 1: Straight wire electrode in position for lateral incision, applied to right and left sides to detach fibrous

bands at the alveolar ridge. Fig. 2: Round wire electrode in position. Follows down the curve of the hemostat (Kelly forceps); a V-shaped piece of tissue is excised.

scar tissue. In performing an alveolec-
tomy, two horizontal incisions are
made and a strip of flabby tissue is first
dissected and excised. The alveolar
ridge is then trimmed by means of rong-
neur forceps. The mucoperiosteum is
undermined and the sharp edges of the
incision are sutured together tightly.

The Electrosurgical Technique

The use of high frequency cutting
current is a modern phase of surgery.
It has passed the experimental stages
and is now highly developed. Electro-
surgical equipment is designed and
adapted to the particular requirements
of oral surgery. In the use of radio fre-
quency current modality in the oral
cavity, with particular reference to in-
cisions in mucous membranes of close
proximity to underlying mucoperioste-
um, great care should be exercised in
the selection of the proper wave length
and current characteristics. A fast-cut-
ting and medium-coagulating current
is preferred in order to prevent undue
heat penetration into deeper tissues and
consequent partial devitalization.

Advantages — The electrosurgical

technique has advantages over the sur-
gical technique in that it affords a deli-
cate control and clear vision of the field
of operation. The operation is per-
formed simply and in a few seconds,

bloodlessly and with asepsis. Trauma
and postoperative discomfort are thus
reduced to the minimum.

Postoperative reaction in the form
of edema or infection are extremely

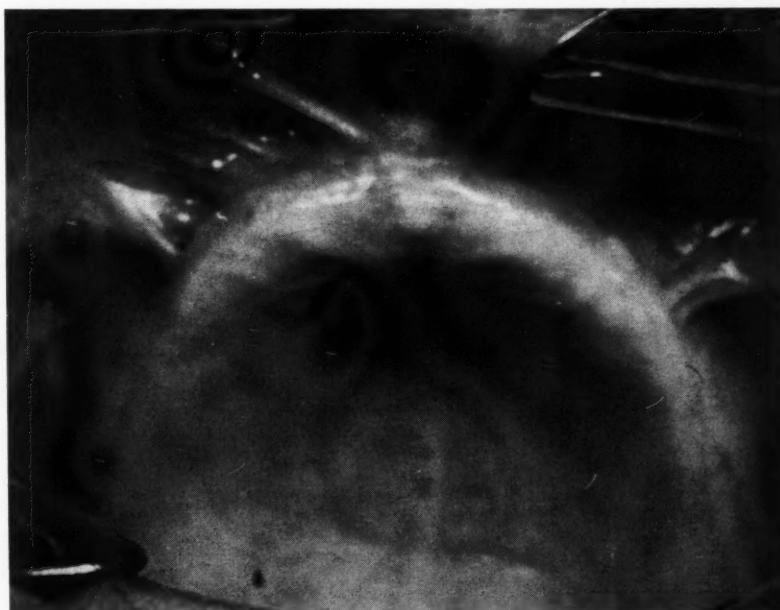


Fig. 3—Low tissue attachments and frenum made the wearing of a denture difficult for this patient.

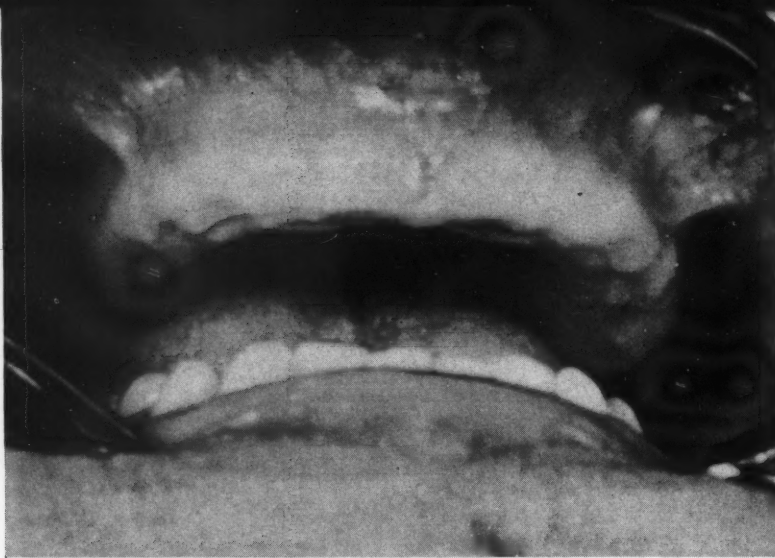
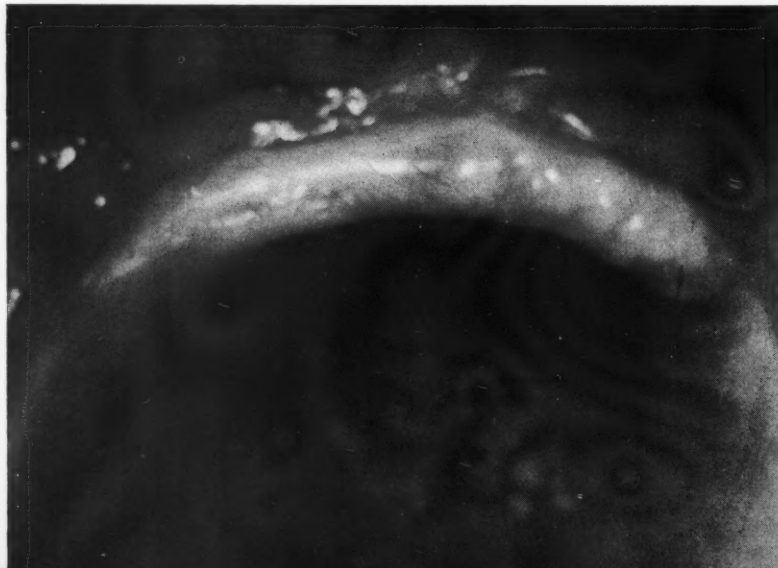


Fig. 4—Case corrected by electrosurgery. Results after six weeks.



Fig. 5—Denture in place.

Fig. 6—Flabby alveolar ridges and hypertrophied tissues.



rare. Scar tissue formation is insignificant as substantiated by the study of case records and photographic evidence of numerous cases treated during the last five years at the clinic and in private practice. Whenever possible controls were set up by using both techniques concurrently and in the same mouth.

Distinction between Electrosurgical Resection and Electrocoagulation—Electrosurgical resection is not to be confused with electrocoagulation by the spark gap type unit. This type of modality is not suitable for electroresection. The cutting current is generated through the use of oscillating vacuum tubes. It is rectified to produce an undamped current of comparatively longer wave length, but with definite pulsations for a smooth short arc. Clinically the fine wire or loop electrodes perform with no apparent flash and sever the tissues rapidly without pressure. Coagulation is controlled by the variation of the current intensity. Incisions with almost a lack of surface coagulation make healing by first intention possible.

Experience—Owing to the keenness and rapidity with which the electrodes advance, manual agility and predetermined direction are essential. It is therefore evident that this new technique will have to be developed through experience, and the operator must rely on advanced technique for a greater percentage of success.

Procedure

1. Local anesthesia is used. Needle insertions should be placed high up into the muco-buccal fold, the solution injected slowly to prevent edema and so as not to alter the morphologic characteristics of the tissues.

2. With a pair of curved hemostats (Kelly) the wider section of the tissues is pinched together and drawn upward.

3. With a round loop electrode the frenum is detached and by following the electrode through against the beaks of the forceps a triangular piece of tissue is scalloped and extirpated.

4. As the activated electrode makes contact with the Kelly forceps, the current is transmitted through the heavy beaks. A wider contact surface subjects

the pinched tissues to a heavier current. Without changing the adjustment on the unit, it is possible, therefore to obtain a heavier coagulating current, which will result in hemostasis and fusion of the incised edges. This makes suturing unnecessary.

5. Subsequent electrocoagulation is usually unnecessary but after a lapse of five minutes allowed for normal blood coagulation, should the bleeders persist, a blunt electrode may be applied to such spots. Blood vessels up to 1 mm. in diameter may thus be coagulated.

6. If the frenum extends in the incisal interproximal surfaces, the use of straight wire electrodes will be found more efficient for the delicate resection of the tissues. Rough edges may be planed and the tissues given the desired mechanical finished form.

Immediately following electrosurgical resection the exposed tissues will present a moist surface similar to the appearance of a raw tissue surface resulting from a bruise. A grayish-white appearance indicates over-coagulation which should be prevented. It is usually followed by extensive sloughing, retarded healing, and undue postoperative pain.

7. After surgery the wound is gently dried, care being taken not to wipe the surface to the extent of destroying the surface coagulations. The wound is painted with tincture of benzoin compound which acts as a protective coating.

8. Should the patient have a denture available, the area on the denture corresponding to the treated area is covered with surgical cement paste and the denture is inserted while the paste is still in a plastic state. It is worn by the patient for a few days, and the paste is renewed if necessary until healing is completed. In the absence of a denture, medicated vaseline gauze is held in place under the buccal fold by the patient or if so desired, it may be temporarily sutured to the mucosa.

9. Postoperative treatment consists in the maintenance of oral hygiene by the patient at home through the use of suitable prescribed mouth washes, preferably analgesic in action. Oxidizing agents, such as potassium permanganate, sodium perborate, hydrogen di-

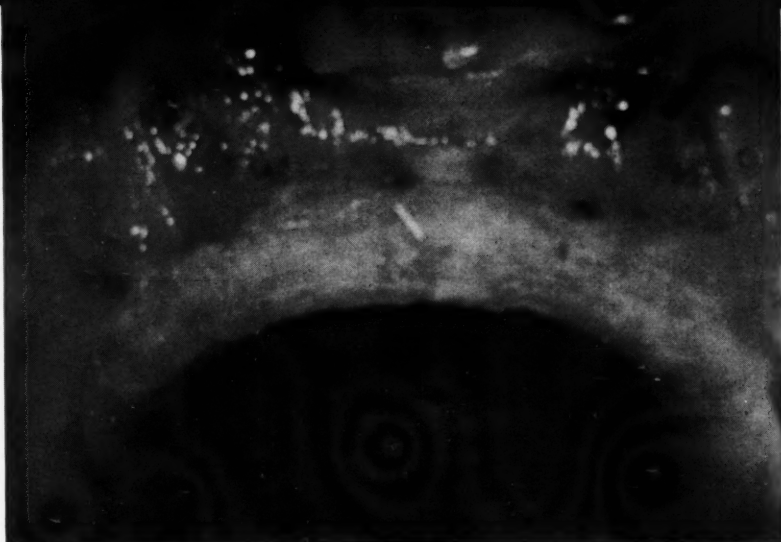


Fig. 7—Electrosurgical correction. Note resection of buccal tissues, frenum and planing of the alveolar ridge.

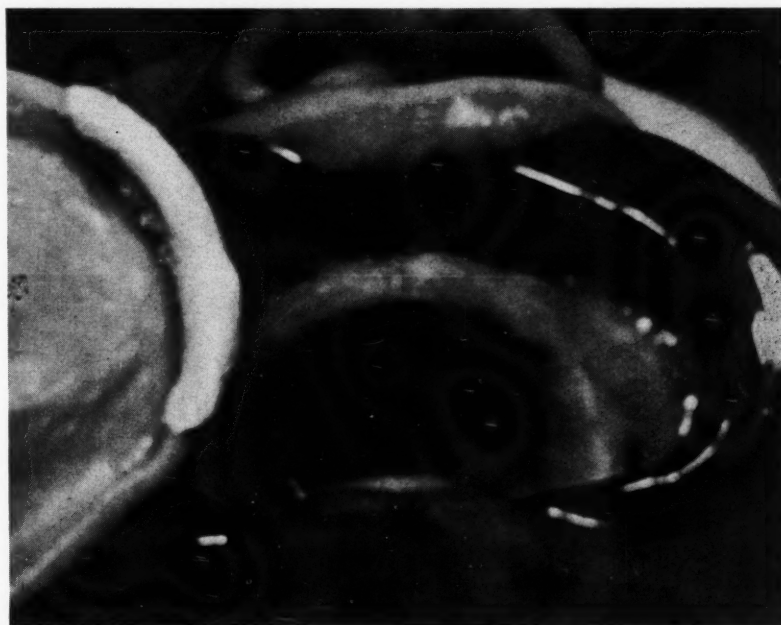


Fig. 8—Addition of surgical cement pack to old denture, serving as a splint until healing is completed.

Fig. 9—Low frenum attachment; strong fibrous bands pulled denture down.



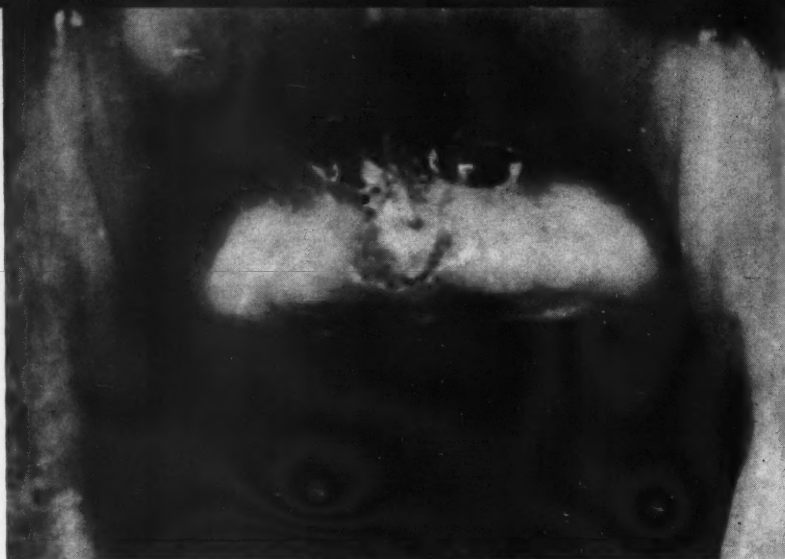


Fig. 10—Immediately following resection.

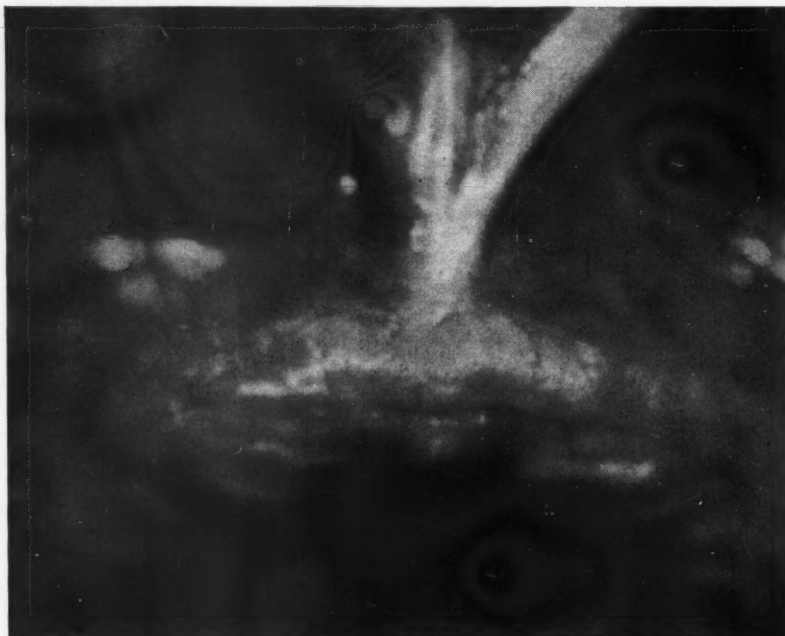
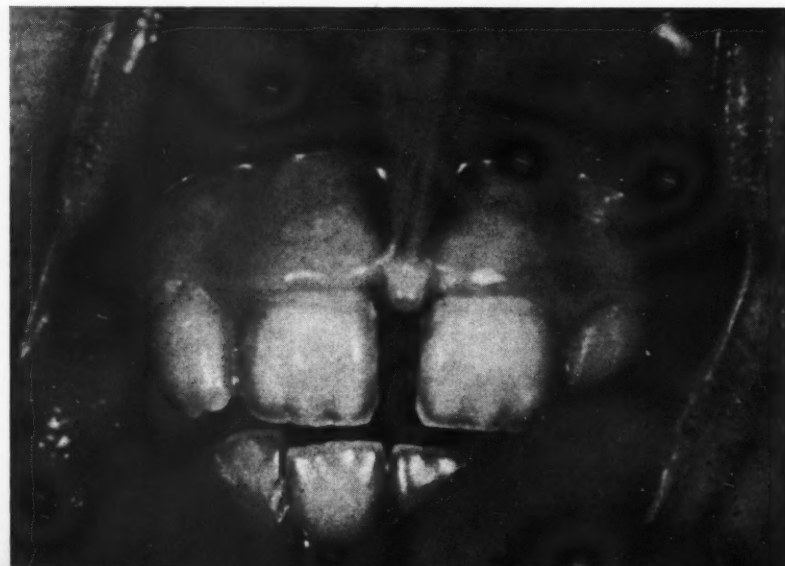


Fig. 11—One month later with frenum attachment raised.

Fig. 12—Abnormal frenum in child, aged 9. Attachment of dense fibers extends palatally.



oxide or solutions containing metallic astringents are to be avoided in the first few days following the operation. As a mouth rinse, amphyll antiseptic, 0.5 per cent, has proved to be a satisfactory agent. It is an effective germicide of low surface tension, the active principles of which, phenol derivatives, have profound analgesic properties. The soap base also acts as an efficient desquamating agent. Another preparation, iotanagen, a compound of glycerite of tannin, iodine and phenol, 5 per cent each, may either be applied topically or used as a 5 per cent mouth wash. Guaiacol, 20 per cent, in olive oil and camphorphenique are suitable means of postoperative medication. These agents and ultraviolet ray therapy will be sufficient for successful management of the case.

Excessive pain may be alleviated by sedation, and edema, if present, is controlled by the application of cold packs to the lips.

Comments

Primary healing will take place normally in from one to three weeks. In a comparative study of surgically and electrosurgically treated cases the former healed considerably faster but a tendency to early inflammation and secondary infection were more apparent. In electrosurgical resection of hyperplastic tissues, the extirpation of flabby ridges and the correction of tissue bands, the mouths were ready for insertion of dentures in less than three weeks' time.

When healing is completed the formation of soft resilient scar tissue may be observed. Clinical observations present convincing evidence that under functional stress this tissue is resolved and transformed into normal mucoperiosteum in the course of a few months, so that in the majority of cases, in due time, there is no perceptible evidence of scarring.

Walnut Park Plaza.

Illustrations 13 and 14
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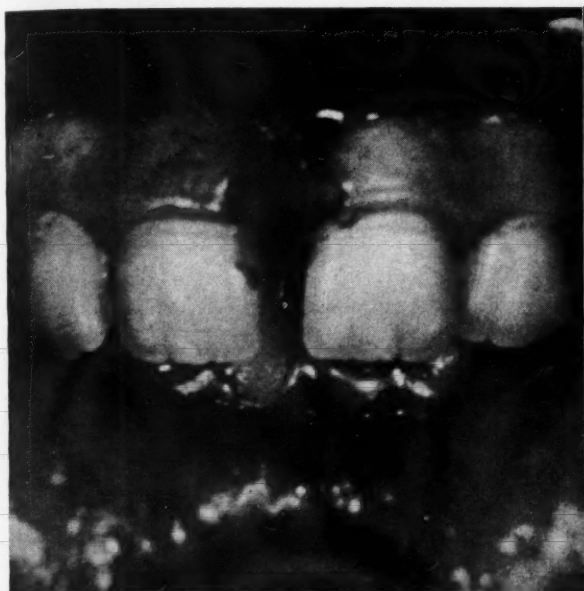


Fig. 13—Resection of the frenum. A V-shaped piece of tissue was extirpated carefully from the interproximal space. The frenum was corrected in the usual manner, and the wound protected by a wax-cocobutter pack, which remained in place for three days.

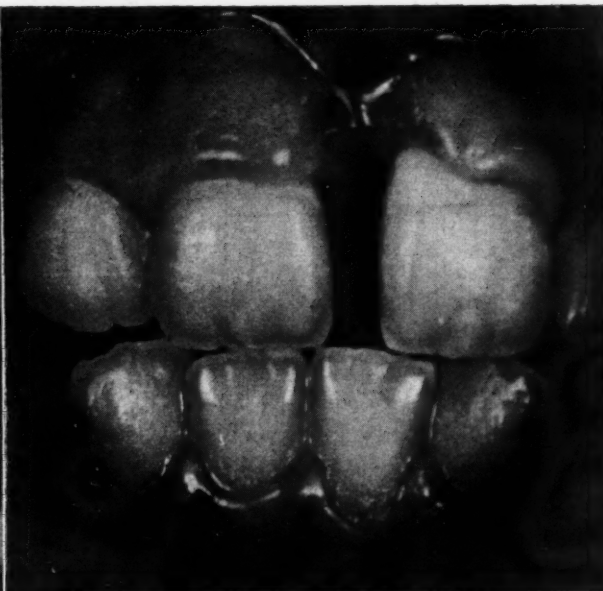


Fig. 14—Twelve days later, tissue completely healed. Correction of diastema by orthodontic treatment has been undertaken.

The Wonders of Mouth Development:

Let us consider for a moment the wonders of mouth development. The teeth are commenced early in fetal life. They are made in a factory deep down in the bones of the jaw. When the child is born, it has 52 potential teeth. They are all formed in this subterranean factory to the complete size and form of their crowns. The enamel organ does all its work independent of any possible outside influences. It does it as though it had a blueprint of its own which it followed without consulting anybody else. Early in fetal life, plans are laid for the temporomandibular joints—and they too, grow according to blueprints of their own. As the teeth are developing independently, the joints are growing independently. There is no visible or mechanical connection between the two.

The deciduous teeth come upon the oral stage singly and take their place with rhythmic stride as if pushed into place by the very pulse of life. To the director of growth is left the problem of assembling these parts into a coordinated entity. To this great director is also left the problem of developing the muscles, bones, and nerves with which to operate this organ. The unmuscled teeth stalk into the chorus of action by forces outside themselves. Helpless they are. They go willy-nilly into their allotted spaces to become the instruments of the main actors. The deciduous teeth are later joined by the great first permanent molars in the sixth year of life; then they begin to leave the stage one by one, to be replaced by the adult teeth.

Toward the end of this replacement, additional marionettes, the second adult molars, take their places at the ends of the troupes. The teeth are as helpless to direct their arrangements as they are to repair themselves. Growth forces and growth directions carry them upon the oral stage to play in a symphony of action or to stumble awkwardly in a poor tragic scene of disorder. But when the growth factors perform their function adequately, the lower teeth are elevated out of the darkness of their crypts to grasp hands with their opponents that are lowered out of the maxilla, and they come together, enmesh and match ridges without disturbing the relation of the jaws; they have proper inclination and are properly rotated upon their axes, so that they can maintain contact relations in any or all of the chewing movements of the jaws.

Oral diagnosis is concerned with this entity throughout its formative period as well as during its adult form and during its period of natural deterioration that comes with old age.—B. B. McCollum, Los Angeles.

Focal Infection and Essential Hypertension

OTTO MEYER, M.D., New York City

DIGEST

Medicine distinguishes between two forms of high blood pressure; namely, high blood pressure attributable to definitely known causes, such as certain chronic diseases of the kidneys, and "essential" high blood pressure (essential hypertension) which means high blood pressure without a demonstrable cause. Essential hypertension was recognized first by the great English physician Clifford Allbutt in 1895. He observed high blood pressure in patients who had no clinical symptoms of kidney disease. This article deals only with essential high blood pressure, and proposes to show that, contrary to the still prevailing general medical opinion, a definite cause of this condition exists, which can be readily recognized and easily removed.

ACCORDING TO THE statistics of the Metropolitan Life Insurance Company,¹ progressive essential hypertension kills either directly or as a contributory cause four times as many persons annually as cancer does. "Normal" blood pressure is considered as the average

¹Crane, Whitfield: Surgical Treatment of Essential Hypertension, Western J. Surg. Obst. & Gynec. 49:88, 1941.

blood pressure in persons of the same age. "High" blood pressure, hypertension, means abnormally increased blood pressure. Hypertension may be due to chronic disease or may be essential, that is, without a demonstrable cause.

Vasoconstrictor Center in Brain in Causation of Hypertension

The arterioles are the smallest arteries in the body which connect the larger arteries with the capillaries. The vasoconstrictor center sends nerve fibers to the small arterioles. These vasoconstrictor fibers stimulate the muscular coats of the blood vessels to contract. The action of the vasoconstrictor maintains a normal tone in the blood vessel. Tone means a slight contraction of the muscles in the blood vessels by means of continuous slight stimulation brought to them by the vasoconstrictor nerves. If the small arterioles are more than normally contracted, they offer increased resistance to the outflow of blood from the heart. In order to maintain the circulation of the blood, the heart muscle has to increase its pressure on the outflowing blood, with the result that the blood pressure rises. In other words, abnormal contraction of the walls of the small arterioles causes increased blood pressure. But the state of contraction in the small arterioles is controlled by the center in the brain; therefore, abnormal stimulation of the vasoconstrictor center in the brain increases the blood pressure. It is my opinion that so-called "essential" high blood pressure is always caused by an increased stimulation of the vasoconstrictor center.

Venous congestion of the brain, that is, an abnormally large accumulation of impure blood in the veins of the brain, is the most common stimulant of the vasoconstrictor center. Landois and Mathisson² and other research workers have shown that increased accumulation of venous blood in the veins of

the brain stimulates the vasoconstrictor center and thereby causes increased contraction of the small arterioles which, as has been said, produces high blood pressure.

Venous congestion of the brain is caused by lack of draining. The drainage of the whole region of the head is accomplished by means of the jugular veins which carry the blood from the head to the heart. If the jugular vein is compared with a rubber tube, one can readily imagine a way of disturbing the free flow of a liquid that passes through this structure. By increasing the thickness of the inner wall its caliber, that is, the diameter of the bore of the tube, is decreased, thereby impairing its carrying capacity. A condition, therefore, which decreases the caliber of the jugular veins is bound to prevent the free flow of venous blood from the head to the heart and causes a venous congestion in the brain.

Jugular Phlebitis as Inciting Condition—The most common inciting condition of venous congestion is an inflammation of the jugular veins (jugular phlebitis). As there is no inflammation without a swelling of the involved tissue, jugular phlebitis causes a narrowing of the vein canal, thereby prevents the free flow of blood from the head to the heart, and eventually results in a venous congestion of the brain. The venous congestion stimulates the vasoconstrictor center in the brain and so increases the blood pressure. My experience has convinced me that jugular phlebitis by its effect on the vasoconstrictor center is the cause of most cases of so-called essential high blood pressure.

Oral Infection as Precursor of Phlebitis—Phlebitis of the jugular veins is usually brought on by an infection in the mouth, as for instance by infected teeth or infected tonsils. The infection spreads from these organs by way of

²Landois, L. and Mathisson, G. C.: Cited in Landois-Rosemann: Lehrbuch der Physiologie, Edition 15, page 701.

HEAD NORMAL CIRCULATION

HEALTHY
JUGULAR VEIN

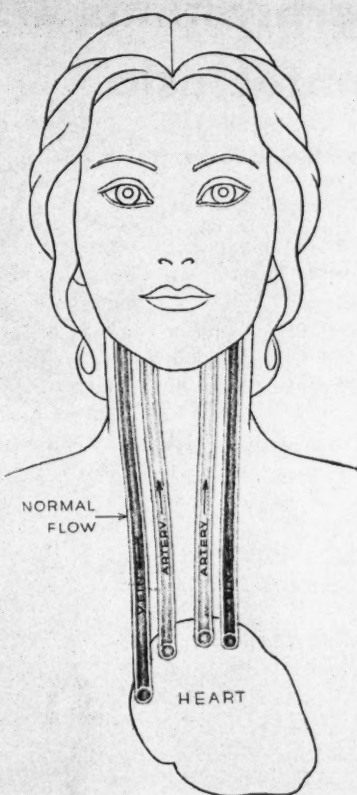
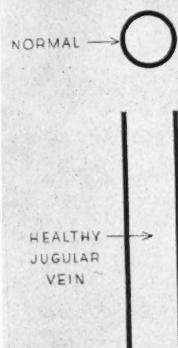


Fig. 1

HEAD CONGESTION ABNORMAL CIRCULATION INFLAMED JUGULAR VEIN

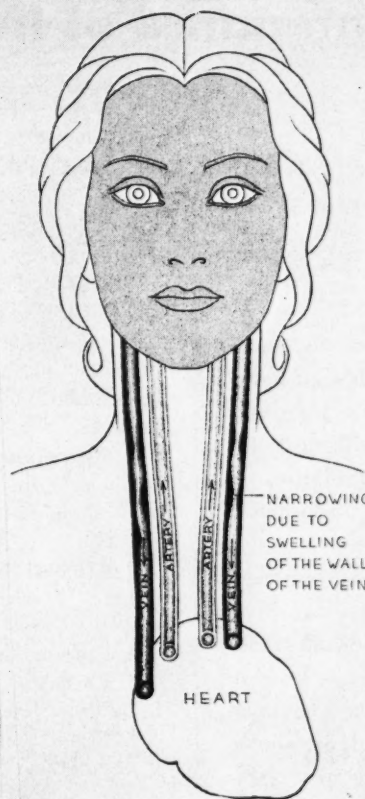
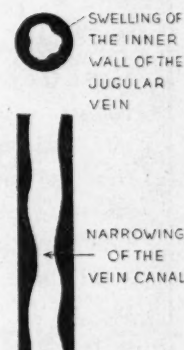


Fig. 2

the small connecting veins into the jugular veins. Colds and influenzal infections seem to spread in the same manner.

Treatment

The logical treatment of essential high blood pressure is the removal of the jugular phlebitis which is the most frequent cause of this condition. This is accomplished by application of leeches³ over the jugular veins. Before treating the jugular veins, however, it is necessary to remove all infections in the mouth which "feed" the infection in the jugular veins. Especially important is the removal of infected teeth. Furthermore, pulpless teeth must be removed whether or not they cause any discomfort to the patient, because every tooth of which the pulp has been removed is always found to be infected, as Professor Oliver T. Osborne⁴ of Yale University explains. Just as important, to be sure, is the removal of infected tonsils.

The fact that essential high blood pressure is caused by a disturbance of the vasoconstrictor center alters its status of an independent disease of unknown origin to that of a symptom of jugular phlebitis. This knowledge makes it possible to treat essential hypertension effectively.

200 West Fifty-Fourth Street.

³Meyer, Otto: The Mechanism of Oral Infection, DENTAL DIGEST, 46:208 (June) 1940.

⁴Osborne, O. T.: Mouth Infection, New Haven, Yale University Press, 1934.

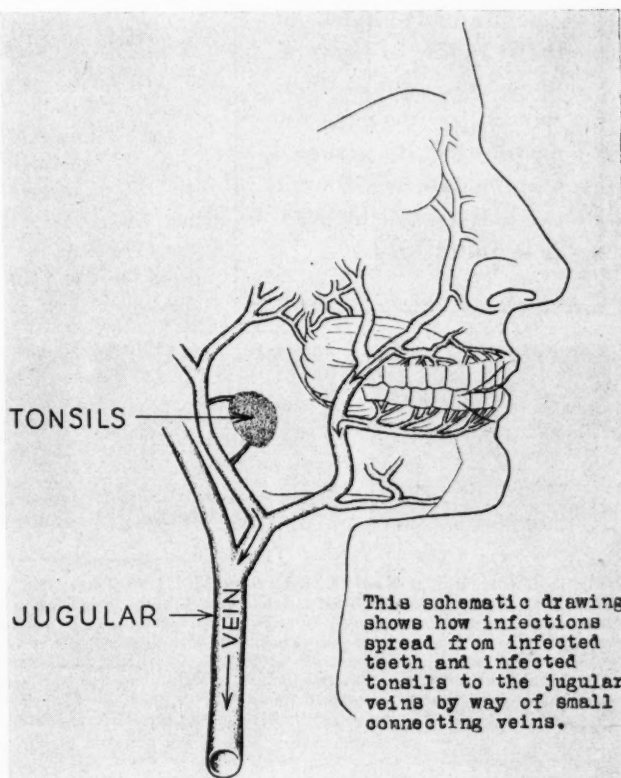


Fig. 3

Maintenance of Interproximal Contact in Periodontoclasia

GEORGE A. SWENDIMAN, D.D.S., Grand Forks, North Dakota

DIGEST

The packing of food between the teeth with loose or open contacts is injurious, causing the destruction and inflammation of the soft tissue, and formation of pockets.

The gum tissue between the teeth must be protected by tight contacts. Inasmuch as it is known that tight contacts become loose or open from tooth movement, the necessary measures must be taken to prevent their separation. The use of toothpicks or the snapping of ligatures upon the gum tissue should be avoided and discouraged. It is assumed that the patient will practice oral hygiene by proper toothbrushing.

THE FOLLOWING MEASURES in sequence are considered necessary in the treatment of periodontoclasia:

1. Thorough removal of mucin plaques, calculus and serumal calculus from all the surfaces and roots of the teeth.

2. Reduction of inflamed, hypertrophied or diseased gums by proper medication, cautery, or surgical gum resection.

3. Removal of all irritation produced by overhanging margins, by inlays or crowns.

4. Systemic treatment if indicated.

5. Correction of traumatic occlusion by relieving areas of excessive stress.

6. Restoration of contact points.

Restoration of contacts is exceedingly important in maintaining the continuous health of the interproximal tissue. Observation of many cases reveals that this factor is entirely overlooked; or when tight contact is obtained, it is often lost in a short time by drifting apart of the teeth.

The continual packing of food between the teeth not only injures the interproximal tissue causing its destruction, but is responsible for the formation of pockets. As a rule, the greatest depth lies equidistant from the buccal and lingual crest of bone of the alveo-

lar ridge. As the pockets become deeper, moreover, the fibers attached to the tooth in this immediate area are weakened, and there is constant force exerted on the tooth to draw it in the direction of the fibers that are not injured or have been less injured than the fibers that are in the area of the pocket.¹ This constant force produces

¹Black, G. V.: Special Dental Pathology, Chicago: Medico-Dental Publishing Company, 1915, page 175.



Fig. 1



Fig. 2



Fig. 3

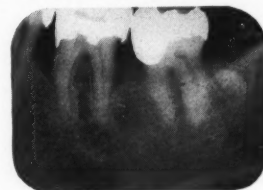


Fig. 4

pockets. With the care that is being given them, this patient's teeth should last many more years.

Fig. 3—Roentgenograms revealing the destruction of tissue between the teeth from trauma produced by continual packing of fibrous food between them and digging out the food with a toothpick, match, pieces of cardboard, or whatever the patient could find to dislodge the food. This might be termed a borderline case, presenting the problem of whether or not it would be better to remove the teeth inasmuch as a successful result is uncertain. Proper treatment and the building of inlays with broken stress, dovetail attachments to prevent a loosening of the contacts might keep these teeth serviceable and the gum tissue healthy for many years.

Fig. 4—Roentgenograms revealing pockets and destruction of tissue from the same cause explained in Fig. 3.

Fig. 1—Roentgenogram of anterior teeth taken May, 1926. These teeth appeared irremediable. The tissues, however, were restored to healthy normal tone by scaling, polishing of all surfaces, medication, and ultra-violet rays applied to the gum tissue by quartz applicators. Three-quarter inlays were cast for each tooth and fitted; impressions were taken, and the contacts soldered together. This arrangement acted as a splint, the firmer teeth helping to support those that were loose, thus keeping them in a state of rest as well as preventing food from packing down into the interproximal tissue. The continued packing of food between the teeth is a decided handicap to the patient in his effort to practice oral hygiene.

Fig. 2—Roentgenograms of the teeth shown in Fig. 1, taken fifteen years later. There has been a recession of the gum tissue, which was to be expected after treatment, but the gums are firm and hug the teeth tightly, and have a normal healthy pink appearance. There are no

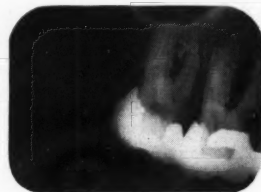
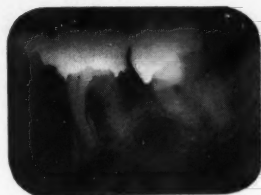


Fig. 5—Roentgenograms of the teeth shown in Fig. 4 after new inlays were constructed for first and second molars with a dovetail lug resting in the space made for it on the first molar. This prevents the packing of food between the teeth, and checks the distal movement of the second molar. The gum tissue became normal in tone and color. Bleeding was corrected. It is possible that some of the bone will regenerate and the gum tissue will entirely fill in the interproximal space.

loose and open contacts. Injudicious use of toothpicks or the snapping of ligatures on the tissue in the interproximal space has been known to be responsible for the destruction of the free gingivae, the interproximal tissue, and the initial formation of pockets. I have seen numerous cases in which the patient's gum tissues were healthy and normal in tone but the free gingivae in certain proximal areas were completely destroyed by the constant use of toothpicks and ligatures. Food mixed with saliva oozes into the interproximal space formerly occupied by the free gingivae. The mucin plaques adhering

to the interproximal surfaces and loaded with bacteria have a tendency to incite inflammation of the soft tissue and produce caries. Teeth with pockets have various degrees of movement and the extent of movement depends on the size and depth of the pocket.

If the patient's gums are healthy, the teeth in tight contact, and if the free gingivae occupy the interproximal spaces, there should be no necessity for using the toothpick or ligature. Dentists should recognize the harmful misuse of toothpicks and should discourage rather than encourage this habit.

Treatment

After the gum tissues have been restored to health, either by mechanical or medicinal means, or both, the problem of maintaining this healthy tone centers almost entirely on the maintenance of tight contacts, the prevention of food packing between the teeth, and the support and rest of the teeth undermined by periodontoclasia. The support and rest of such teeth can be obtained by soldering together the contacts of three-quarter inlays placed upon anterior teeth, or in the case of posterior teeth, a dovetail rest lug is soldered to one inlay, resting the dovetail in the depression made in the adjacent inlay.

Broken stress inlays can be constructed for all posterior teeth. Such an arrangement is shown in Fig. 5. For constant contact when each individual tooth may be supported and still have independent movement, the steps involved in the construction of broken stress inlays are as follows:

1. Inlays are constructed for the teeth involved, fitted into place, and the correct occlusion is obtained. I prefer the indirect method with the making of copper amalgam dies.
2. Impressions of the teeth with the inlays in place are taken in solvite. The inlays are removed from the teeth and

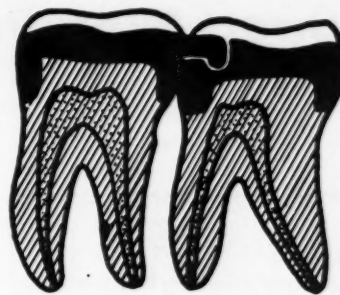


Fig. 6—Lateral view drawing showing cross section of inlays in their relationship to each other and the socket connection of the dovetail.



Fig. 7—Occlusal view.

placed in their proper position in the amalgam dies. The dies are fitted into the impression and run up in stone; or, the inlays may be placed in the impression, oiled to facilitate removal, and then run up with diolite or stone.

3. When the investment is hard, a dovetail is made in one of the inlays.

4. A wax impression to conform to the dovetail in the inlay and its relation to the other inlay is made and cast. This dovetail should be made in the inlay of the tooth that has the strongest supporting structures.

5. The cast gold dovetail is assembled, waxed to the approximating inlay, removed from the die, invested and soldered.

6. The proximal and occlusal surfaces are polished as for a single inlay.

First National Bank Building.

Unsolicited Manuscripts

FROM TIME TO TIME THE DENTAL DIGEST receives inquiries regarding its attitude toward unsolicited manuscripts. These are especially welcome. There are many excellent dentists who have original suggestions, who have improved or modified a technique or have refined an operation; but these men do not contribute to the literature because they are afraid that they do not know how to "write." Dentists are not expected to be "writers." If they will tell their stories in a straightforward manner, the editors will be happy to cooperate with them in presenting their material. Unsolicited manuscripts sent to THE DENTAL DIGEST are read with care and open-mindedness and are reported on promptly.

Direct Wax Patterns For Large Restorations

MOSES A. LEVY, D.D.S., New York City

DIGEST

A simplified technique is described for securing direct wax patterns of full and three-quarter crown preparations on posterior teeth.

Two types of preparations are considered: (1) the type with a gingival margin that lies almost on one plane or has a slight amount of festooning; (2) the type with a recession at some point in the gingival circumference, or, with considerable festooning of the gingival line of the tooth.

A copper band, susceptible of controlled stretching with especially modified pliers, and automatically self-centering, is the essential determining feature of this technique.

THERE ARE TWO types of preparations to be considered in applying the simplified technique, to be described here, for securing wax patterns of full and three-quarter crown preparations on posterior teeth: The first (Fig. 1) has a gingival margin that lies almost on one plane or has a slight amount of festooning. The second type (Fig. 2) has recession at some point in the gingival circumference, or, the gingival line of the tooth has considerable festooning.

Technique for Full Crown Patterns

1. To secure a wax pattern of the full

crown preparation (Fig. 1), select a copper band that fits the gingival portion of the preparation snugly (Fig. 3).

2. Anneal the copper band (Fig. 4).

3. With the Densco band stretcher, select a stretching point to fit the band (Fig. 5). Begin stretching the band about 3 mm. above the gingival end of the band (Fig. 6). The resulting shape (Fig. 7) is then worked with the beaks of the pliers until the succeeding shapes

shown in Figs. 8 and 9 are reached.

4. The portion of the band above the dotted line (Fig. 10) is the part used to obtain the wax impression. The excess is trimmed away (Fig. 11), and the small apron, about 1/64 inch, is then turned in with the Pesso contouring pliers (Fig. 12), with the result shown in Fig. 13. The band now fits the gingival circumference as snugly as the original band, yet allows ample room

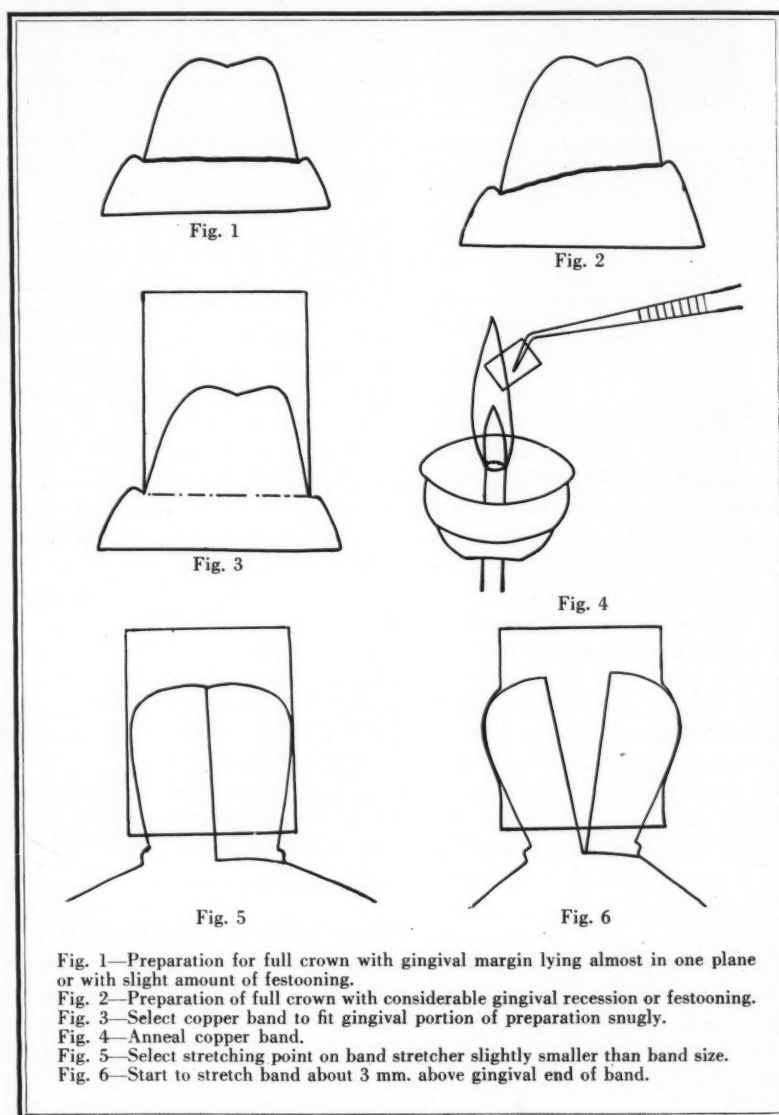


Fig. 1—Preparation for full crown with gingival margin lying almost in one plane or with slight amount of festooning.
Fig. 2—Preparation of full crown with considerable gingival recession or festooning.
Fig. 3—Select copper band to fit gingival portion of preparation snugly.
Fig. 4—Anneal copper band.
Fig. 5—Select stretching point on band stretcher slightly smaller than band size.
Fig. 6—Start to stretch band about 3 mm. above gingival end of band.

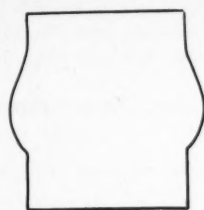


Fig. 7



Fig. 8

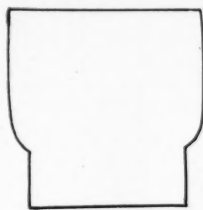


Fig. 9

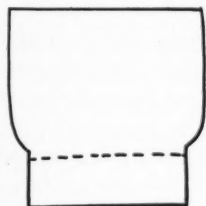


Fig. 10

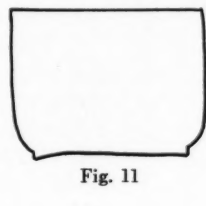


Fig. 11

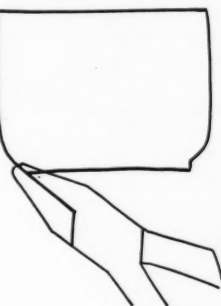


Fig. 12 →



Fig. 13

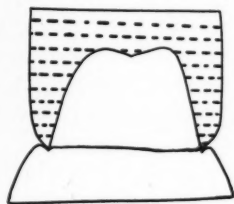


Fig. 15

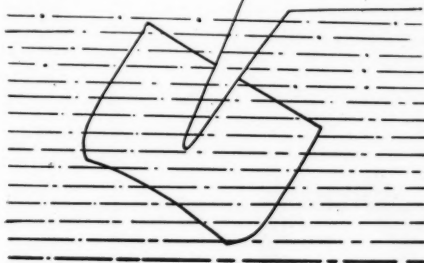


Fig. 14

Fig. 7—Resulting shape after stretching.

Fig. 8—Shape after further stretching.

Fig. 9—Shape after final stretching.

Fig. 10—Portion of band above dotted line is used for obtaining wax impression.

Fig. 11—Trim away excess of copper band.

Fig. 12—Small apron of 1/64 inch, left after trimming with curved shears, is turned in with contouring pliers.

Fig. 13—Band ready to take wax impression.

Fig. 14—Dip band in water.

Fig. 15—Band is filled with thoroughly softened regular inlay wax; gingival portion flamed, and forced to place in line with long axis of tooth.

for inlay wax. The band is now about 1/16 inch above the occlusal surface of the preparation when pressed gingivally, and even longer when bite-raising is intended. Another feature of this type band is that it is automatically self-centering. It does not crowd to one side of the tooth or another to leave a thin portion of wax in one place and a thick portion in another.

5. The band is dipped in water (Fig. 14) and filled with thoroughly softened Kerr's regular inlay wax. The gingival portion of the wax-filled band is flamed once over a Bunsen burner, then is forced to place (Fig. 15) in line with the long axis of the tooth. One finger should be placed to close off the occlusal end of the band. Fig. 16 shows result if an ordinary band were used.

6. The wax is chilled and the band is ready to be removed (Fig. 17).

7. With a number 700 tapered fissure bur in a contra-angle handpiece, cut through the band to within 1.5 mm. of the gingiva. The cut margins of the band are parted with college pliers while one finger is kept firmly on the occlusal aspect of the wax pattern. The portion of the band at the gingiva will split when the cut margins are separated.

8. The band is easily removed because it was wet and annealed before it was filled with wax.

9. If the portion of the tooth beyond the preparation has severe undercuts, trim some of the wax away with wax carvers similar to the Maves number 3, holding the pattern firmly in place. A staple is heated and set into the top of the wax impression (Fig. 18), then both are chilled and removed.

When the tooth does not have severe undercuts the band with the impression is simply withdrawn.

10. The impression is filled with a few drops of water to reduce the heat while the band is being cut with a medium or fine grit lightning disc in the straight handpiece. The cut is not made completely through the band, but is completed with the point of a B-P knife. This cutting is generally done at the thickest part of the wax pattern, or where the greatest amount of excess exists.

11. The gross excess of the wax is trimmed in the hand (Fig. 19). The wax is trimmed to the outline of the gingival margin of the preparation with a B-P number 11 knife (Fig. 20). The margin is thinned out to a featheredge, and the pattern is returned to the tooth.

12. The staple is removed by grasping it with the heated beaks of a pair of college pliers.

13. Final carving for contour is done. The gingival wax is smoothed and burnished to remove every vestige of excess beyond the preparation.

14. The bite is approximately carved at this point, but it is better to leave the occlusal surface a little heavier than is required to prevent distortion and warpage.

15. The wax pattern is completed (Fig. 21).

16. Small droplets of wax are placed



Fig. 16

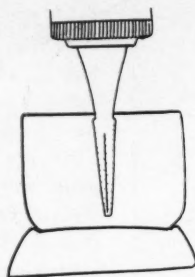


Fig. 17

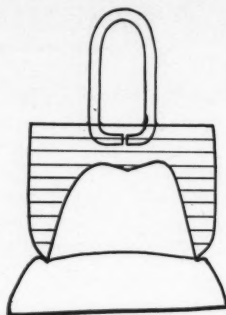


Fig. 18

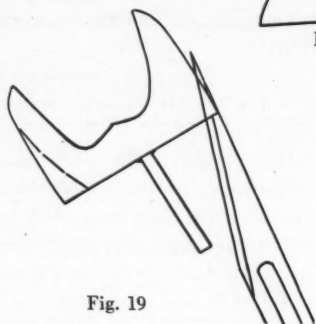


Fig. 19

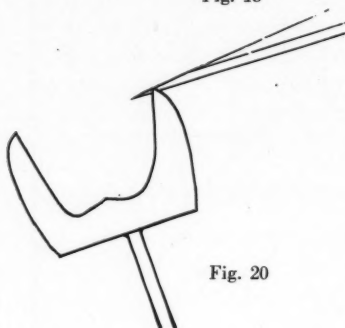


Fig. 20

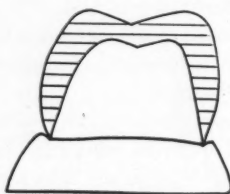


Fig. 21



Fig. 22

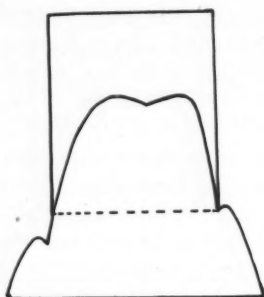


Fig. 23

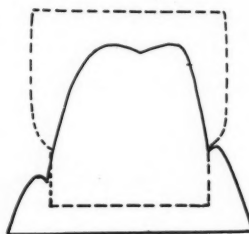


Fig. 24

Fig. 16—Result if an ordinary straight band is used to take the impression.

Fig. 17—After wax is chilled a number 700 fissure bur in a contra-angle handpiece is used to cut through the band to within 1.5 mm. of the gingiva.

Fig. 18—Heat staple; set into top of wax impression, chill and remove wax.

Fig. 19—Trim gross excess of wax in the hand.

Fig. 20—Trim wax with knife to outline of gingival margin of preparation and thin to featheredge.

Fig. 21—Completed wax pattern after burnishing and trimming on tooth.

Fig. 22—Small drops of wax on pattern form bumps on casting for crown remover to engage.

Fig. 23—Select a copper band to fit tooth at point where it first touches the gum margin.

Fig. 24—With a small pair of shears, all gingival festooning in the unstretched portion of the band is done while checking constantly with tooth.

on the buccal and lingual surfaces of full crowns, half way between the occlusal and gingival aspect to facilitate removal of the casting from the tooth later with the inlay remover (Fig. 22).

Technique for Three-Quarter Crowns

1. Three-quarter crowns require a droplet of wax only on the lingual surface. Contact is then added if necessary, with black carding wax before the pattern is invested.

2. When considerable gingival contour or festooning of the band is required to cover the preparation (Fig. 2), the size of the band must be such that it will hug the tooth at the point where it first touches the gum margin (Fig. 23).

3. Proceed as in Figs. 4 to 9. All the gingival festooning is done with a small pair of shears in the unstretched portion of the band. Check constantly with the tooth (Fig. 24) while this is being done.

4. Trim as in Fig. 25.

5. With a round or egg-shaped bur-nisher, push out (Fig. 26) the metal, so that the trimmed band looks like Fig. 28 as compared to Figs. 24, 25, 26, and 27. Fig. 29 shows the amount of wax in an unstretched band as compared to the amount of wax in a stretched band (Fig. 28).

6. In securing direct wax patterns for posterior three-quarter crowns, the band is prepared as described for a full crown.

7. The band is placed on the tooth; the labial portion of the band is pressed against the tooth, and the mesio-buccal and disto-buccal corners of the band are drawn away from the preparation to give additional room for wax (Fig. 30, occlusal view). If there is a contacting tooth, the band must be drawn against this tooth. (This also is true in the case of full-crown wax-ups.)

8. If necessary, the labial-lingual margin of the band is festooned for about 2 mm. to allow for clearance of the buccal contour of the tooth when carrying the band and wax for the initial impression to place.

9. After the initial impression is chilled, the band is slit with a number 700 bur as described for the full crown in step 7. The wax covering the buccal

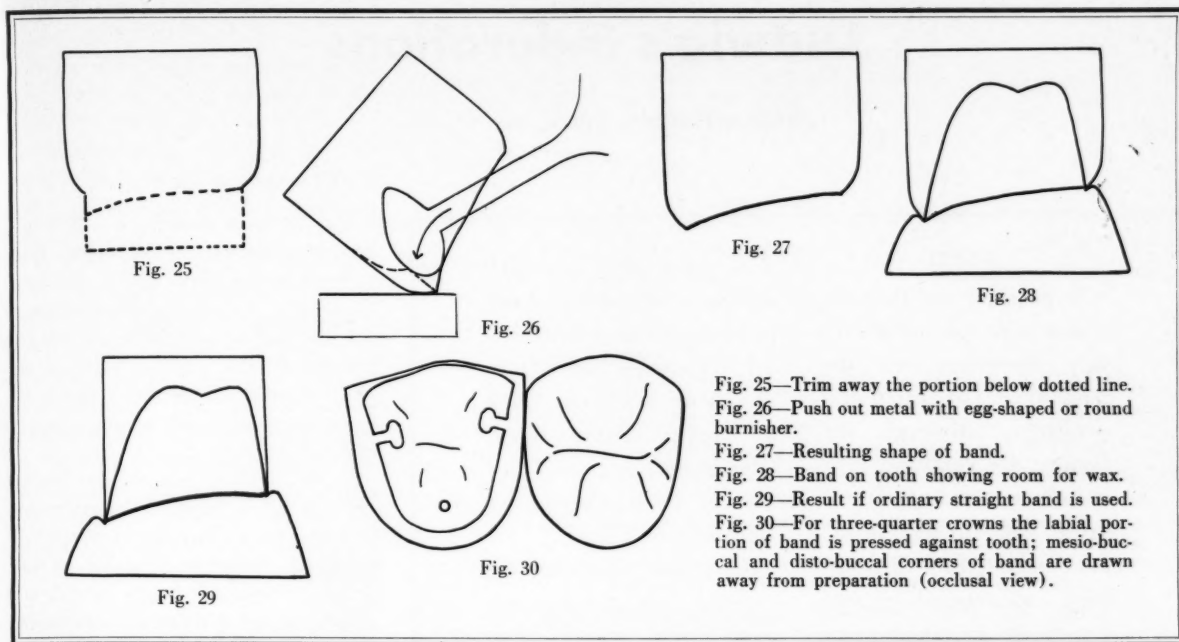


Fig. 25—Trim away the portion below dotted line.
Fig. 26—Push out metal with egg-shaped or round burnisher.

Fig. 27—Resulting shape of band.

Fig. 28—Band on tooth showing room for wax.

Fig. 29—Result if ordinary straight band is used.

Fig. 30—For three-quarter crowns the labial portion of band is pressed against tooth; mesio-buccal and disto-buccal corners of band are drawn away from preparation (occlusal view).

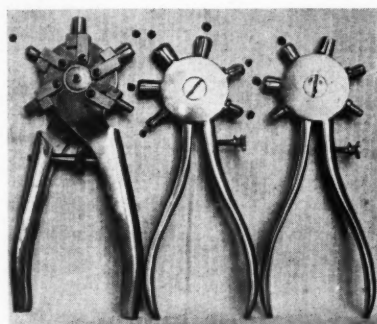


Fig. 31—Left to right: Old model pliers (usable points dotted). Pair modified by author (all points usable). New model pliers (usable points dotted).

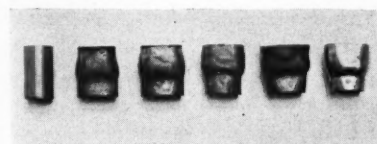


Fig. 32—Stages of band stretching.

surface is removed to the mesial, distal, and occlusal margins; then the pattern is removed and trimmed as for the full crown (step 11).

10. The wax pattern is replaced on the tooth. A piece of rubber dam is drawn around the pattern and the margins of the pattern are touched with a warm instrument. The dam is removed carefully after the pattern has been again chilled; then the pattern is carved, sprued, and removed as usual.

In Fig. 31 are seen the old model Densco pliers on the left and the new model on the right. The old model has three stretching points that can be used for this technique and the new model has two (marked with dots). All six stretching points are available in the central pair of pliers, which I modified for this purpose.

Fig. 32 shows stages of the band stretched and Fig. 33 shows the bands

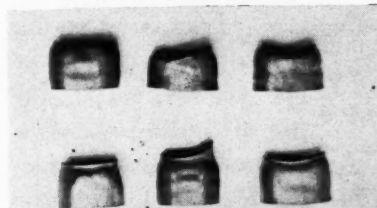


Fig. 33—Upper row: Small apron left after festooning for the gingival margins of teeth with different types of preparation. Lower row: Results after the aprons have been turned in with contouring pliers.

festooned for different types of preparations. On the upper row of Fig. 33 can be clearly seen the small amount of apron left after festooning for the gingival margins of the tooth. On the bottom row can be seen the results after this apron has been turned in with the Pessio contouring pliers.

1819 Broadway.

Ludwig's Indurations

JOSEF NOVITZKY, D.D.S., San Francisco

DIGEST

It is pointed out that the end-results of submaxillary swellings are the same as that of submental swellings, although the former are commoner. It is believed that a dental cause can invariably be demonstrated for these indental roentgenologic and durations by competent clinical examinations.

Any abscess draining lingually from the mandible may be a menace to life. The clinical course indicates repeated infection from a pulpless tooth.

The greater the swelling the more clinically apparent is the downward pressure. The main path for the escape of pressure is along the carotid sheath. In the carotid sinus are the nerve centers controlling the production of carbon dioxide. This center stimulates and incites the center of respiration in the hind brain to action. Pressure on this structure results in Cheyne-Stokes respiration. It is thus concluded

that collapse is due primarily to acapnia and not to edema in breathing vessels. Patients die from chemical asphyxia, lack of carbon dioxide from over-breathing; and asphyxia from circulatory failure.

Carbon dioxide decreases first from over-breathing; second from depressed vitality and lessened muscle tone. With the loss of muscle tone, asphyxia, from retarded venous return, develops. Failing venous return causes further changes in the tissues. Poisons develop where circulation is blocked.

The matter of occluded circulation is of concern in Ludwig's indurations. Poisons from blocked circulation are added to the poisons from the micro-organism draining from "dead teeth," or, from the residual abscesses from "dead teeth."

Treatment for indurations of the floor of the mouth and throat is outlined.

dental foramen down the mylohyoid groove to the sublingual region. Root ends of lower third molars are near the inferior dental canal. On the lingual side the root ends occasionally are not covered by the internal plate of the body of the mandible. For this reason, the lower third molar abscess may be immediately dangerous to life.²

In the median line, on the lingual side, just below the genial tubercles, are foramina for the passage of vessels and the mylohyoid nerve. Suppurating lower anterior teeth, especially centrals and laterals, would at times drain lingually, under the mylohyoid muscle from these foramina. Phlegmons starting here have been called³ "Ludwig's phlegmons."

Etiology

Submaxillary swellings are commoner than the submental swellings. Clinically, however, there is no difference between the two. The end-results are the same, if the progress of the phlegmon is not checked. In combating the spread of these indurations, it is vitally important to locate and drain the primary focal center of the suppuration. Competent dental roentgenologic and clinical examinations will invariably show a dental cause for the swellings.

Foci of Infection—Infected scratches of the tongue and floor of the mouth are mentioned in the literature as a cause for some of these swellings. In my experience over the years I have not found a submaxillary or a submental induration that was not due to dental suppuration. The clinical course in these cases also indicates, not transient infection from a scratch but repeated infection from a dead tooth; or a re-

IN 1915 ATTENTION was called¹ to the drainage points for the passage of gas

and fluid from mandibular suppurations to the tissue sheaths of the neck and the floor of the mouth. It was pointed out that inferior dental canal suppurations drain from the inferior

¹Novitzky, Josef: The Radiograph in Dentistry, Pacific D. Gaz. May, 1915. Presented before the San Francisco Dental Society March, 1915; Surgical Section San Francisco County Medical Society, May, 1915.

²With the exception of the author's observations on suppurations of the inferior dental canal, medical and dental texts make no comment of this pathologic condition.

³The author demonstrated by blunt dissection that texts on anatomy describing the mylohyoid nerve as a motor nerve supplying the floor of the mouth are only partly correct. The mylohyoid nerve has some sensory filaments which enter the lingual side of the median line of the mandible.

sidual bone abscess resulting from a dead tooth.⁴

There is as wide a variation in the time necessary for streptococci to spread in living tissue as there is a variation in their virulence. Any abscess, however, draining lingually from the mandible, may quickly become a menace to life.

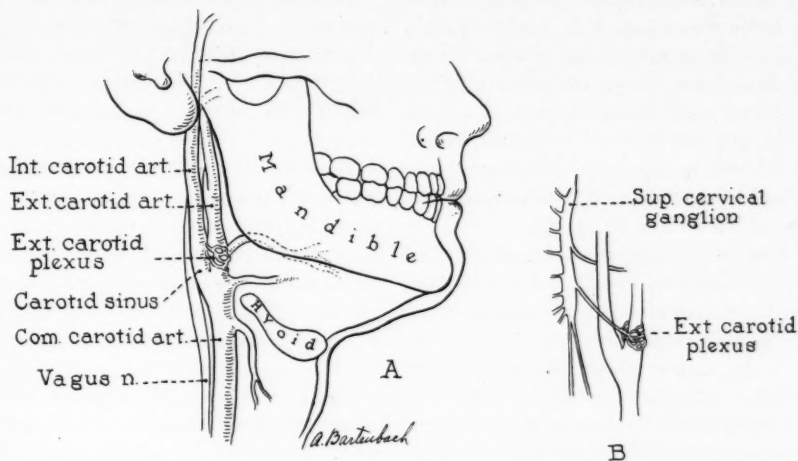
Anatomy—The anatomy of the part is the key to this danger, when suppurative exudates and gas from streptococci collect under the tongue. The mylohyoid muscle prevents escape of gas and fluid into the mouth. It acts the same as a rubber band. It expands upward, pushing the tongue upward and backward. At the same time the collection under the tongue is pushed backward and downward. The greater the swelling, the more clinically apparent is the downward pressure.

This was shown in the August, 1941 issue of *The DENTAL DIGEST* in an editorial feature depicting the main path for the escape of pressure as being along the carotid sheath. Here we have the reason for a large number of deaths that occur once these phlegmons start.

Respiration and the Carotid Sinus

At the bifurcation of the common carotid artery, below the angle of the mandible, is a small bulbous enlargement of the artery, the carotid sinus. Here are situated nerve centers controlling the production of carbon dioxide. This center stimulates and incites the center of respiration⁵ in the hind brain to action. This small bulb on the carotid artery is a vital nerve center. Pressure on this structure results in Cheyne-Stokes respiration.

Wrestlers produce unconsciousness



Relationship of carotid sinus to the structures of the jaw and neck.

by pressure in this region. It is commonly believed that the pressure stops the supply of carotid blood to the brain, producing anemia of the brain and unconsciousness; but before unconsciousness occurs, there is an extended period of gasping and the typical facies of asphyxia are seen.

End Result—In the light of Henderson's observations and what is now known about the carotid sinus, one may conclude that collapse is due primarily to acapnia and not to anemia of the brain.

Complete occlusion of carotid blood is not readily accomplished. Also the function of the Willis' circle at the base of the brain is a provision of Nature's to insure a quick adjustment of pressure and blood volume to vital parts, in case of retarded circulation in some of the larger vessels supplying the brain.

Shock to the nerve center in the carotid bulb from a blow with the edge of an open hand is also used by wrestlers. It has been believed that collapse of the victim was due to injury to the vagus or to the phrenic nerves. Here again the injury is probably mainly due to the retarded production of carbon dioxide and the respiratory failure resulting from injury to the carotid sinus. Surgeons over the years have been forced to witness deaths from indurations of the floor of the mouth and the throat. It is commonly believed that these phlegmons kill by causing mechanical

asphyxia from edema of the glottis. If this were correct, we could expect relief from choking, following the operation of tracheotomy. The operation is followed by rapid, easier breathing, but the victims die despite the opened airway.

Chemical Asphyxia

Patients do not die from the toxemia, although they are toxic. They do not die from a bacteremia. The frightened look; the staring eyes; the gasping breath—these are symptoms of asphyxia. It is not mechanical asphyxia. It is chemical asphyxia. The asphyxia is not primarily due to lack of oxygen. Oxygen inhalations are of little help. It is lack of carbon dioxide owing to over-breathing⁶ and to pressure on the carotid sinus which undoubtedly causes respiratory collapse and death. I have witnessed the clinical course of many suppurations involving the floor of the mouth. Gasping and asphyxia, however, are seen only when the induration extends to immediately above the clavicle. This is the point where pressure exerts its fatal effect.

Anesthetists are familiar with the regulation of breathing exerted by carbon dioxide. A slight decrease of carbon dioxide induces a decrease or cessation of breathing. A temporary cessa-

⁴Editor's Note: The term, "dead tooth," indicating a tooth from which the pulp has been removed, is objectionable in certain dental circles. The *Digest* prefers the usage "pulpless" to that of "dead tooth," because it seems somewhat more accurate. The author has been allowed his preference for the word "dead," however, throughout the article whenever reference is made to a tooth from which the pulp has been removed.

⁵In this article, my authority for the statement that respiration is controlled by the carotid sinus, and the general concept regarding the chemistry of respiration, has been derived from the work of Vandell Henderson, Professor of Physiology, Yale University. I have abstracted Henderson's words and researches at length and I have used his epochal work on respiration, toward a solution for the enormous death rate from "Ludwig's angina."

To the student who desires a better understanding of the combustion of respiration and its profound relationship to preventive medicine I recommend: Henderson, Vandell: *Adventures in Respiration*, Baltimore, Williams & Wilkins Company, 1938. Henderson's work is not only illuminating, it is essential for a proper understanding of the subject—Josef Novitzky.

⁶The term "over-breathing" refers to rapid, shallow respirations which exhaust the available supply of carbon dioxide. Normal respirations are about sixteen per minute, but may vary above this. According to Henderson's double the normal respirations may escape notice unless the observer is watching for it.

tion of breathing follows forced respiration. This is Nature's automatic regulation. Sometimes it is overdone and before the apnea ends, asphyxia and death may follow. A scared child may be forced into anesthesia and pass into fatal apnea. It is such cases that are attributed to a persistent thymus gland, or, in other words, to "status lymphaticus." An excited patient may over-breathe to such an extent, that when full anesthesia is induced, the carbon dioxide remaining is not sufficient to maintain respiration.

The carbon dioxide content of the blood acts instantly on the center of respiration at the base of the brain, increasing the depth of the breathing and the ventilation of the lungs. An experiment mentioned by Henderson proves this: An artery of dog A was supplied to the head of dog B, so that the brain of dog B was supplied with blood from the lungs of dog A. Carbon dioxide was administered to the lungs of dog A, causing B to breathe deeper than without the carbon dioxide.

Diminished carbon dioxide resulting from over-breathing leads to diminished oxygen for the tissues. In this condition the blood does not readily give up its oxygen to the tissues. As the asphyxia in the tissues progresses and depression becomes apparent, less carbon dioxide is produced by the muscles and acapnia may develop without excessive breathing.

Persons on a low (9 per cent) supply of oxygen become confused. They lose control of their hands. Writing becomes difficult and impossible. If 3 per cent carbon dioxide is added to the air they remain normal on the same low oxygen supply. Persons who breathe monoxide and dioxide during a fire, collapse when they come into fresh air and the stimulus of dioxide is lacking.

Asphyxia from Circulatory Failure

Asphyxia can result from circulatory failure as well as from respiratory failure. Brief inhalations of 5 per cent carbon dioxide in the air will increase muscle tonus and augment the return of venous blood to the right side of the heart. Respiration deepens and more oxygen is supplied to the blood. Carbon dioxide stimulates tonus and circula-

tion as much as it stimulates respiration.

Circulation is stimulated by increasing the venous return. Muscles produce carbon dioxide in proportion to their tonus, and the volume of air breathed depends on the amount of tonus.

There should be no doubt that venous return is insured by tonus. The principle of hydrodynamics applied to venous return, quoting Henderson, "fails to work." When tonus departs from muscles, hydrodynamics will not maintain circulation. Efforts to revive a victim are then hopeless.

This is seen in the variations of the condition called "shock." In these surgical, traumatic, or toxic depressions, collapse is due to deficient venous return. Arteries and capillaries are fighting stasis by contracting to the last, compensating for the lessened output from the heart. When collapse reaches the stage where muscles and tissues lose their tonus, it is the end of circulation and respiration and of what we call life.

It is thus seen that the vicious circle breaks up Nature's automatic physiologic processes. One thing leads to another: carbon dioxide decreases first from over-breathing; second, from depressed vitality and lessened muscle tone. With the loss of muscle tone, asphyxia, from retarded venous return develops. Here we encounter the first stage of what is called shock, or the inadequate systolic filling of the heart. The automatic attempt to compensate is still evident in the contracted arterial system. The failing venous return causes further changes in the tissues. Poisons develop where circulation is blocked. This was observed⁷ during the first World War when deaths from "shock" reached stupendous figures. They were mainly due to histamine shock, resulting from tourniquets: poisons that developed in a part blocked off from the blood circulation by pressure. When the constriction was removed, poisons entered the circulation, causing fatal toxic shock. In the American service near the end of the war, tourniquets that had been in position longer than a few hours, were allowed to remain until the occluded part was amputated. This prevented histamine shock and saved life.

Occluded Circulation in Ludwig's Indurations

The matter of occluded circulation is of concern also in the so-called Ludwig's indurations. The hard board-like swelling both on the skin surface and in the tissues, when opened at operation, shows microscopic evidence of circulatory arrest. The tissues are cyanotic and lack normal circulation. Poisons from blocked circulation are added to the poisons from the micro-organism. This, added to the acapnia from over-breathing, pressure, and loss of tissue tone, means that the patient is in the terminal stages of infection. That infection, I have tried to demonstrate for twenty-six years, will be found draining from dead teeth, or from residual abscesses from dead teeth. It required thirty years of Doctor Henderson's time before his scientific observations reached the point where they were practically applied. Even then, his work was not accepted scientifically. It was used practically "after it had entered the back doors of hospitals in tanks of carbon dioxide." Fifteen years of scientific proof left the medical profession cold to Henderson's views. Those who criticized him said it was nonsense to give a victim of asphyxia inhalations of from 5 to 8 per cent carbon dioxide. "Oxygen was what the patients required," they said. The oxygen was administered and the patient died of asphyxia. Henderson spent another fifteen years in demonstrating his carbon dioxide inhalations to fire departments, to mining and lighting companies. A stage was finally reached when laymen, firemen, were called to bring their inhalators to hospitals to revive patients dying of asphyxia. In that way, Henderson's contribution to science, the saving of life from asphyxia, entered the hospitals.

Today, despite the fact that hospitals are generally equipped with tanks of carbon dioxide there are those who maintain that "Henderson's work is discredited." How many additional years will be necessary before carbon dioxide is generally used in therapy to prevent terminal complications?

Focal Infection and Dead Teeth

Another medical research pioneer, Doctor Edward E. Rosenow, the man

who proved on animals the role of Billings' conception of focal infection in disease, also has been referred to as one whose work is discredited. The concept of focal infection as the cause of disease is 100 per cent American. Europe did not contribute to this concept. It is thus not strange for some medical men trained in Europe to believe that the truths of focal infections "are discredited." In dentistry the accumulation of evidence against the advisability of retaining dead teeth, about which this communication is likewise concerned, has now covered a period of twenty-six years. It is not strange that some Europeans failed to grasp the truth of the matter. They know nothing about focal infections.

Although dentists found it difficult to abandon what they were taught in their college days, it is to the credit of the dental profession that many did abandon the practice of tooth pulp devitalization and "root canal therapy" after their graduation from college.

Treatment for Indurations of Floor of Mouth and Throat

1. Surgically, the primary dental focus of infection must be located and drained. It will be found in the mandible.

2. If edema and induration have become established, secondary foci must be drained. They will be found between tissue sheaths and between periosteum and bone.

3. Not only is wide separation of the tissue sheaths necessary for drainage, it is also necessary for the relief of pressure from streptococcal gas and fluid.

4. Pressure perverts the normal physiologic circulation of a part and allows retrograde disease to become established.

5. Therapy in the form of hot wet applications following the surgical relief of pressure, encourages the reestablishment of normal circulation in blood and lymph. Also it inhibits growth of the infecting micro-organism.

6. The streptococcus, the common infection in phlegmons, is an anaerobe. It grows away from oxygen-carrying blood. That is the reason why, after the circulation becomes blocked, spaces between tissue sheaths and under periosteum become secondary culture tubes for the propagation of the streptococcus.

7. It has been said "hot wet applications throw a large volume of infection into the blood stream." The infection,

*Moon, V. H.: Shock: Its Mechanism and Pathology (From the Department of Pathology, Jefferson Medical College), Philadelphia. Oxford Medical Press, 1938.

however, grows where there is no blood stream. Spaces where it incubates are warm, wet with tissue fluid, and away from circulating blood and oxygen.

8. After incision and separation of the secondary pockets of infection, irrigations of hot 2 per cent saline solution will deplete the parts of fluids, micro-organisms, and broken-down tissue cells.

9. If respirations are rapid, short inhalations of from 3 to 6 per cent carbon dioxide should be used early. Drugs that produce over-breathing, such as caffeine should be avoided. Strychnine is valuable to help maintain tonus in muscles and to maintain full systolic heart action, through proper venous return. Morphine must be used in conjunction with inhalations of carbon dioxide to prevent over-breathing.

Comment

There is no good reason why surgeons who are called early must continue to witness a high mortality rate. Dentists must develop a better sense of their responsibility and understand the danger of delay in these cases. Early consultation is essential.

908 Hyde Street.

Classification of the Causes of Bleeding Gums

(After Pelzer, Rudolph H.: Adapted from *The Dental Outlook*, 28:279 (June) 1941)

PRIMARY EXTRINSIC FACTORS (DIRECT EXTERNAL INFLUENCES)

Injury

1. (Acute (swift onset; course with severe symptoms)
 - a) severe cut, scratch or burn
 - b) toothbrush injury
 - c) Vincent's infection
 - d) idiosyncrasy (abnormal reaction) to food or drug.
2. Chronic (continuous, of long duration)
 - a) calculus: (1) salivary (deposits on teeth); (2) serumal (deposits on tooth roots under the gums)
 - b) food impaction (forceful wedging of food against the gums during chewing)
 - c) gum irritation by dental res-

toration (such as ill-fitting removable bridges, or inlays and crowns with rough margins near the gums)

- d) toothbrush injury (repeated injury to the gums and teeth brought about by haphazard brushing)
- e) abnormal chewing habits (as when food is chewed only on one side of the mouth)
- f) traumatic occlusion (abnormal chewing stress due to an uneven bite, which is capable of producing or has produced injury to the gums and other supporting structures of the teeth)
- g) nonocclusion (a condition in which one or more of the teeth

cannot be brought into contact with their opponents in any position that the jaw may assume)

- h) cervical dental caries (tooth decay near or under the gum)
- i) mouth-breathing
- j) mouth habits (due to occupation or nervousness)
- k) non-detergent diet (a type of diet in which soft, non-fibrous foods predominate, so that neither cleansing of the teeth nor effective stimulation of the gums result from its use)
- l) occupational injury by chemical or mechanical agents.

PRIMARY INTRINSIC FACTORS (DIRECT INTERNAL INFLUENCES)

(Continued on page 44)

Immediate Acrylic Jacket Crowns

LEON M. GECKER, D.D.S., New York City

DIGEST

For the operator who prefers to construct his own acrylic jacket crowns there is here presented a method wherein laboratory time is minimized to the actual processing of the jacket. The time-consuming elements of packing an amalgam die, registering the bites, pouring casts, articulating, and carving at the bench are eliminated.

The method described affords a preview of the completed jacket crown to the patient and operator, thereby facilitating agreement as to the natural carving, positioning, or esthetic irregularity in cases in which several jacket crowns are to be constructed simultaneously.

The technique may be applied in the construction of acrylic inlays without any modification of the jacket technique.

Materials

IN ADDITION TO the regular armamentarium used for the preparation of teeth for jacket crowns the following materials are required for the technique to be described: (1) an assortment of celluloid crown forms (Caulk's); (2) inlay casting wax (Kerr's ivory color inlay wax); (3) fast-setting model stone (die stone); (4) an indelible pencil; (5) a handy oil can (engine oil for the handpiece is satisfactory); and

(6) a sharp lancet (Bard-Parker blade).

Technique

The preparation of a tooth for an acrylic jacket crown is essentially the same as for a porcelain jacket crown; however, the following suggestions are made:

The preparation of the tooth should favor the "parallel wall" rather than the cone shape. The retention afforded by parallel walls is greater than that obtained by a conical or tapered core preparation. Although it has been said that acrylic jackets can be made without shoulders, and that they have been satisfactory insofar as strength is concerned, such jackets may be dislodged easily because the thin margins may induce separation from the cementing medium under abnormal masticatory stress. I therefore favor a strong shoulder and accordingly do not make shoulderless acrylic jackets in the upper jaw.

1. After the preparation is completed, a compound tube impression of the tooth is taken in the customary manner. The impression is examined, preferably with the aid of a magnifying glass to insure a clear outline of the shoulder.

2. The outer shoulder line in the impression is marked with a sharp indelible pencil, and an immediate fast-setting stone die is packed. (The marked outline will transfer to the die.)

3. Boxing the tube impression for the pouring is optional inasmuch as a long stem is not necessary for the steps that follow.

4. While waiting for the stone die to set, a celluloid crown form most closely resembling the completed jacket, is selected and trimmed to fit the case.

5. The crown form is lubricated internally with a drop of oil on a cotton pellet and filled with ivory inlay wax by holding the stick of wax in the Bunsen flame and dropping the melting wax into the celluloid form until it is completely filled.



Fig. 1—Upper right central prepared for acrylic jacket. Corner has been built up with cement.

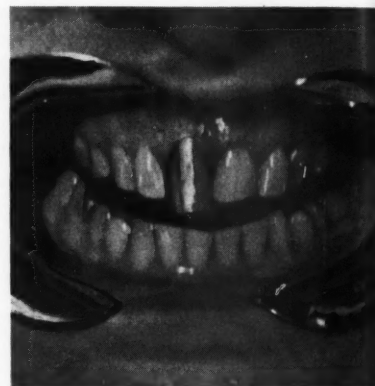


Fig. 2—Tube impression for diestone model in position on prepared tooth.



Fig. 3—Celluloid form fitted to preparation. Form is over-size to permit carving wax to desired shape.

6. The form is pressed to position on the prepared tooth and allowed to cool. It can easily be removed at this

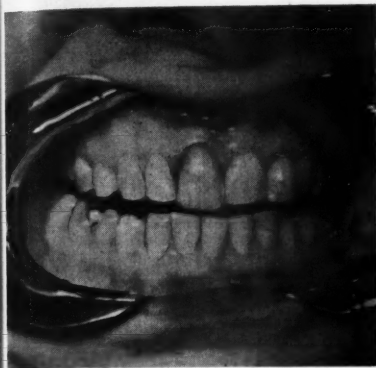


Fig. 4—Celluloid form filled with ivory tinted wax, placed over preparation.

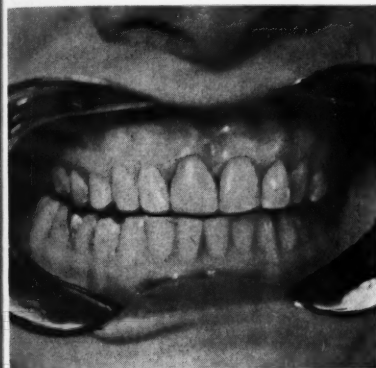


Fig. 5—Celluloid removed. Wax trimmed and carved to shape. Stone die is used to complete cervical adaptation.



Fig. 6—A, Tube impression; B, stone model; C, wax jacket ready to be flaked.

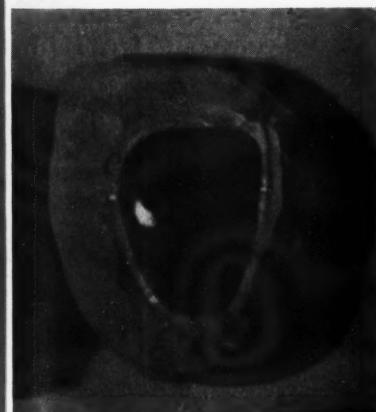


Fig. 7—Method of flaking acrylic jacket. Left side: Lower half of flask; labial aspect of carving exposed. Trough for excess scraped around wax. Right side: Upper half of flask; sheet of "non-waterproof" cellophane is shown. Die stone is used throughout.



Fig. 8—Completed jacket

time and examined internally. If cracks have formed in the wax, another drop of wax is dropped into the form and the form is reinserted in position. The reason for this is obviously to obtain an accurate pressure-fitted interior of the wax jacket. This impression is now set aside.

7. The stone model is now examined. If it has not set completely, the time can be utilized to construct a provisional silicate jacket crown for the patient. (The provisional jacket is removed from the patient's mouth and set with zinc oxide and eugenol paste at the end of the sitting.)

8. When the stone die has set, it is separated by immersing in a small copper pan of hot water. The stone die is then trimmed at the chair with a carborundum wheel to the previously outlined shoulder line. (The penciled outline will have been transferred to the stone, giving a clear definition of the preparation.)

9. With a sharp lancet, the celluloid form containing the wax pattern is stripped from the wax, care being taken not to mutilate the carving.

10. The trimmed stone die is lubricated with a drop of dental engine oil, and the wax form is placed on the die.

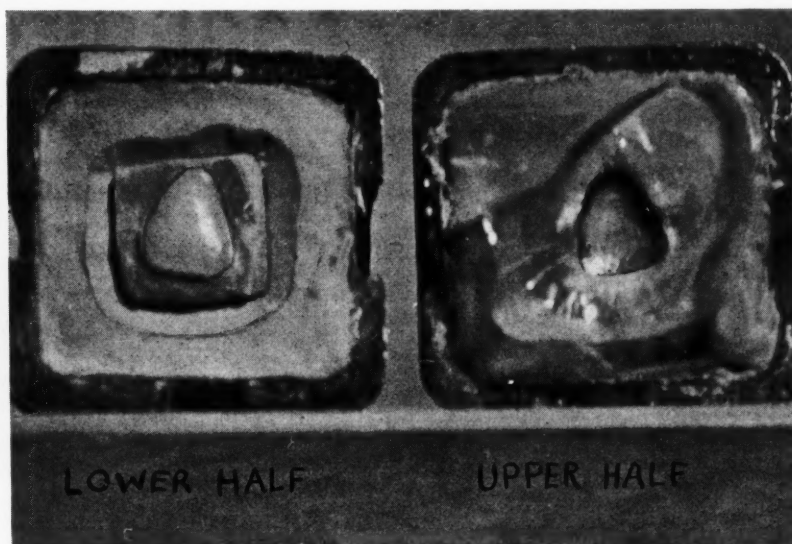


Fig. 9—A, Carved wax jacket in stone "patty." This method facilitates correct positioning of carving prior to flaking; also simplifies retrieving from flask after processing.

Additions of wax are applied with an inlay carving instrument to the wax form to complete the shoulder line, and any discrepancies are corrected by carving. The wax is chilled, and tried in the mouth. With care, little carving or reshaping should be found necessary at this stage to obtain a wax carving that will simulate the completed jacket crown. Bite clearance may be carefully checked at this time.

11. The patient may now be consulted as to the carving, positioning, or special markings of the crown.

12. The completed wax jacket is ready for processing.

The wax jacket is invested in stone by filling the interior carefully and placing the carving face up on a patty of the same mix. The anterior aspect of the jacket should not be covered. The

only parts that are embedded are (1) the interior (core); (2) the complete shoulder; (3) the lingual; (4) the mesial and distal surfaces. When set, the patty is placed into the lower half of the processing flask as is customary.

(This step may be delayed until a later sitting, in which case when the completed jacket is ready for processing, the provisional silicate jacket, already prepared, is placed with zinc oxide and eugenol paste of medium consistency. This affords perfect protection with good esthetics.)

13. Various methods for processing are available from the manufacturers of the acrylics used for this purpose.

Comments

Tinfoiling is not necessary when the separating mediums are used as direct-

ed by the manufacturers. If the operator wishes to tinfoil, however, he may do so by applying the foil to the oiled stone die and placing the completed wax jacket over the foil. In removing from the die, the foil should come off with the wax. In either case the die is set aside and is helpful in checking the fit and for trimming and polishing the processed acrylic jacket.

In the construction of acrylic inlays, the wax carving is obtained by the simple expedient of using a cone of wax as in the direct inlay technique. The wax is placed into the stone model of the preparation and carving is completed on it. The model containing carved wax is invested in the processing flask as described.

30 West Fifty-Ninth Street.

Surgical and Dental Treatment of Fractures of the Upper and lower Jaws in War Time

(An Abstract Review of 119 Cases)

[By A. M. McIndoe, M.S.: Proceedings of the Royal Society of Medicine, Section of Odontology (Sectional page 15), 34:267 (March) 1941.]

This communication deals with the surgical and dental management of 119 cases of fractures of the upper and lower jaws which were treated in an E.M.S. Maxillo-Facial Unit between September 3, 1939, and December 31, 1940. The group does not include other fractures of the facial bones without particular dental interest.

As might be expected, a considerable proportion (43 per cent) of the patients had associated injuries which varied from extensive soft tissue lacerations to fractures of long bones or skull injuries, depending on the cause of the trauma. Immediately, therefore, the importance of the surgical aspect of the dental treatment became apparent. It has been the effort of the Unit to work out the most suitable plan of treatment, so that none of the lesions should be neglected at the expense of others, and especially so that the patient should not be overtreated. As an example one

might cite the advantages of interdental eyelet wiring as an efficient first aid or temporary measure in a patient with a fractured femur in whom as little disturbance as possible is advisable in the early stages. Later more elaborate forms of fixation might be used.

Sex and Age (Males, 101; Females, 18)—The age varied from 6 to 72. As would be expected, the highest incidence is among fit young men on active service between 18 and 35, but there is a secondary rise among older people owing to bombing of the civilian population. Most of these occurred in patients sitting quietly at home, and again, in many, associated injuries were common.

Causes—The following were the immediate causes of fracture: (1) Bomb and shell fragments; (2) mine explosions; (3) gunshot wounds; (4) collapse of buildings; (5) motor car, motorcycle collisions; (6) plane crashes; (7) blows, kicks, and (8) falls. The first three types of causes produced mostly penetrating or perforating wounds and fractures. Mostly severe

comminuted fractures with gross displacement occurred from causes 4, 5, and 6. Blows and kicks caused mostly localized fractures without external wounds.

The excessive violence of the trauma tended to produce a much more severe bony injury than one encounters in civil life, though it might be said that the specialized nature of a maxillo-facial unit would naturally attract the more severe type of case.

Fractures involving both mandible and maxilla were almost always due to head-on crashes and other forms of extreme violence. They form a difficult group, for they are commonly associated with severe neurologic and other injuries, so that treatment must often be delayed until the general condition of the patient improves.

Examination—After careful clinical examination of the entire bony structure of the face, roentgenograms are taken to confirm observations. These include antero-posterior and lateral view of the head, rotated views of the

(Continued on page 48)

The Editor's Page

IT IS TRUE THAT the present is a period of increased employment. Fewer names are on the public assistance lists. It is, however, a period of decreased incomes for many. In general the present is a time when more people in the lower economic brackets are employed but an increasing number in the middle economic classes who are not engaged in defense business are seriously affected. Many small business men, executives, salesmen are faced with drastically curtailed earnings. People in the higher economic brackets are facing with apprehension the increased tax rates and the necessary governmental regulations being introduced overnight. Manufacturers, large shareholders, private entrepreneurs, and highly paid executives are in this class.

The present is the imperative time to take a critical look at the subject of dental practice management, because the dentist who does not now make an effort to conduct his practice efficiently is cutting himself a pattern of trouble. As this new year begins some people have more money than they had at this time last year; some have less. A new group of earners are now potential dental patients; whereas an old and faithful group of patients may have difficulty in paying for our services. We should do what we can to encourage this new group of potential consumers who are being favorably employed in defense programs to become actual consumers. We must at the same time be prepared to be lenient in extending credit to some of our older and most loyal patients in the middle economic classes who are seriously endangered under the present economic shakeup.

Despite the efforts of the administration to control inflation and to put a ceiling on prices the cost of living has noticeably risen. People will first seek to satisfy the essentials of food, clothing and shelter. If they have anything left they will, as they sometimes do, buy dental care. Under inflation, dental fees can never keep pace with the dentist's increased living costs. The dentist is not in a business in which he can mark up his merchandise or add 5 or 10 per cent. In fact, it is difficult for a dentist to add even a dollar or two to an ordinary fee. The result is that dentists usually absorb the increased costs of doing business. If a new class of potential dental patients is being created and the present group of consumers will find embarrassment in paying their bills, we have an entirely different marketing problem before us. With more patients being drawn from the lower economic

brackets and fewer from the distressed middle and higher brackets, it may be necessary to lower dental fees somewhat and to increase production—to put dentistry on a quantity basis. But this is extremely difficult, because of the nature of the dental service. Dentistry cannot be turned out at its present high standard in mass production, and whoever likes to suggest this fallacy is doing a disservice to both the public and the profession.

We may expect that the usual buyers of the more expensive types of dental care, the middle and higher earners, will retreat from the current market or will defer purchasing some types of dental care until the period of uncertainty is behind us. Dentists are urged during this economic upheaval to act conservatively, cautiously and only after careful deliberation. Do not listen to the siren voices of so-called dental economists who would suggest radical departures in dental practice management or who come to you bearing panaceas.

One aspect of the newer dental market wherein more of the lower income people may be drawn is the possibility of buying private dental care under the budget plan. With the present curtailment in general installment buying there should be some deflection from the fields of merchandise to the buying of dental care under the budget system. Dentists who have used regular budget plans properly report extremely favorable results.

Professional budget plans follow the general pattern of installment buying contracts in the mercantile field. The patient in advance of treatment contracts for a definite amount of dentistry; he agrees to pay specific amounts at specified times. He is given a book or card in which payments are recorded exactly the same as payments are credited for automobiles, radios, or furniture. An alert dental assistant is usually given the responsibility of watching the accounts. She must be as relentless and as persistent in demanding payments on time as are credit managers in business. The budget plan has been successful where it has been clearly presented to patients, where a dental assistant is given complete control over its operation without interference from the dentist. If the future dental market may be made up of more low income people and fewer from the economically disturbed middle classes, business-like budget plans for dentistry will be to the advantage of the public and the dental profession.



THE BURDEN OF PAIN

TIME was when pain had to be borne with patience and fortitude as one of life's inescapable burdens. But today there is at hand, almost always, some degree of relief from the weary plod along the furrows of pain.

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SCHERING & GLATZ, Inc., 113 West 18th Street, New York City

Contra- Angles



Good Publicity . . .

A newspaper picture showing a glamorous girl of the radio in an equestrienne pose carries the legend: "Though Miss So-and-So lives and works in New York, she is spending a week in her home town being treated by her local dentist." This is good publicity for dentistry, because it shows that people of prominence think enough of their dental health to travel from their place of employment for a week's holiday to have the necessary treatment performed. It doesn't matter who the dentist is or what town he is located in—dentistry isn't limited by geography. Some of the best dentistry is done in the towns and villages and some of the fumble-fingered quacks are located in swanky office buildings in metropolitan areas. The dentist's skill and conscientiousness have no relationship to location. Those are values that he carries in his own person, in his brain and in his fingertips. The dentist's proficiency is as much as anything his will to do the job well.

If this newspaper story carried the name of the dentist who is being flattered by having the glamor girl spend a week in his office for treatment, much of the effectiveness of the story would have been lost. Such publicity would be merely a plug for a particular person. As it is, it is a fine bit of publicity for the profession which is bigger and more important than any of us in it.

Another Example of the Same . . .

Doctor Irving S. Cutter, writing in his column "How to Keep Well" in *The Chicago Daily Tribune*, tells of "The Service of the Dentist" in these words:

"Few of us realize how much we owe to our dentists. As a profession, this important group has passed the century

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mark. In recalling the inauguration of formal instruction in this essential field we must not forget the name of John Harris. He coupled theory and practice with wise educational precepts and launched dentistry on a firm foundation. Fortunately, his old clinic building in Bainbridge, Ohio, has been preserved. It bears an appropriate inscription, with the words, 'He who has no veneration for his predecessors should expect none when his day is done.'

"What contributions to the betterment of mankind have come because of the creation of this special branch of the healing art? Man had long sought for a harmless substance which would destroy pain. No small credit attaches to Dr. Horace Wells of Hartford, Connecticut, who performed extractions with the patient under the influence of an anesthetic two years before the famous public demonstration in the operating room of the Massachusetts General Hospital.

"The gradual emergence of the dentist, however, from a mechanical artisan to a powerful force for good health has been an uphill struggle. There was a period when no one realized that germs within the mouth had the slightest relation to disease. Although theories had been advanced that decaying roots disturbed digestion, no positive proof was forthcoming until Frank Billings, E. C. Rosenow, and others forged the link between root abscesses and disorders of the heart, kidneys, and digestive tract, and the nervous system.

"We now recognize that any focal infection is a menace, but it remained for the dentist to recognize and rout out abscesses involving the jaws. No one of us is stalwart enough to withstand the constant stream of pus and bacteria that may be poured into the blood from such a center. Even though no specific malady ensues, one's resistance may be lowered to a level at which normal well being cannot be maintained.

"No little attention has been given to proper mastication if we would prepare food for complete digestion. Our first hints came from our dental colleagues. They pointed out that bad occlusion (meeting of the teeth) may make thorough grinding of food impossible with the result that it may enter the

This Patient may
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D. D. TOOTH BRUSH



This Patient may
need the **TWO ROW**
D. D. TOOTH BRUSH



With the new Two Row D. D. Tooth Brush, or the regular Three Row D. D. Tooth Brush—whichever you recommend—your patient uses a modern aid for oral hygiene. The Two Row Brush, made because so many dentists demanded it, has a more compact brushhead.

Both the Two Row and Three Row D. D. Tooth Brushes have the same ingenious handle twist which turns naturally in the hand for easier, more correct and more efficient tooth brushing and gum massage. Both brushes offer strategically spaced tufts and resilient bristles for maximum interproximal penetration.

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**SCIENTIFICALLY DESIGNED FOR
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ACCURATE BITES AND IMPRESSIONS!

For Acrylic Jacket Crowns & Inlays

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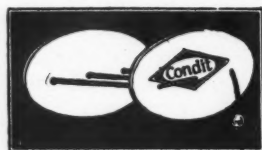
Squash Bite and Impression Cup
gives just what you want.

Accurate impressions of all surfaces of the tooth, and the bite *All together*, one operation only.

WHY save time and impression material on every
NOT operation. More important better impressions,
better bites and finished work.

Made from special bristol
board stock with sufficient strength
and resistance to moisture.

Squash Bite and Impression Cups



Cellophane included for
Short Bites.

.75 per box of 24
\$2.50 per box of 100



Bite and Impression

P. N. CONDIT

BOX 204, BACK BAY, BOSTON, MASS.

stomach improperly mixed with saliva. Then, too, these friends have played a large part in our understanding of nutrition which has more to do with stamina than almost any other factor.

"In stopping decay before it has destroyed a molar the dentist assumes a vital role as a public health agent. But while he does his part, all too often we fail to do ours. We wait until real trouble develops before we seek help. In 99 cases out of 100 most of our teeth can be preserved for life if we will treat them fairly. But this calls for a careful examination at least every six months, the spotting of every cavity, and the elimination of inflammation wherever it occurs.

"More of us are living into the sixth, seventh, and eighth decades. This means that both the physician and the dentist must give more thought to our elderly friends, who are not as prompt as they once were in the matter of recovery or in warding off illness. Comfort and happiness in the declining years will depend in large measure upon faithful and assiduous care.

"No health campaign can come to fruition without the aid of those who, with intelligence and understanding, help us to retain our 'grinders.' "

Sly Salesmanship . . .

A uniformed telegram messenger came charging in to hand over a plain white envelope on which was written the word "Personal." Anyone would naturally think that the message contained something urgent, important, and indeed personal. The content, however, was an exhortation to buy a certain kind of underarm deodorant for the control of hircismus. Even if I had been favorably disposed to the use of this particular goo, this sly kind of selling would turn me against the product. We do not like to be fooled. We do not like to have advertisers pull a hoax on us or to try to put their message across by a counterfeit method which is what this "personal" message represents. Some slick salesman or advertising manager thought himself pretty clever to use uniformed telegram messengers to tell his story. What he did, though, was to set up a sales resistance to his product; to make the recipients want to turn to other creams and pastes to



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A.D.A. SPECIFICATIONS**



Doing the Right Thing

Here are several Squibb Dental Products that have proved their worth and deserve a place in your practice.

SQUIBB TOOTH POWDER — Safe—and pleasant to use. Its cool minty taste makes it a favorite with children. It contains magnesium hydrate—a reliable antacid.

SQUIBB ANGLE TOOTHBRUSH —Has a small brush head, mounted on a slim metal shank bent at an angle like your mouth mirror. Designed to make it easier to reach less accessible areas of the teeth. Adaptable to all types of mouths and all brushing techniques.

SQUIBB ORAL PERBORATE —A pleasant, palatable, free-flowing sodium perborate powder for use on a toothbrush or in solution as a mouth wash, when indicated.

SQUIBB DENTAL CREAM — A safe, refreshing dentifrice, made from Squibb Milk of Magnesia. Designed for the home care of the teeth and free from any ingredient harmful to the teeth or gums. Its cool minty taste makes the daily routine brushing of the teeth really enjoyable.

SQUIBB ANTISEPTIC SOLUTION —An effective and useful agent in oral hygiene. May be used as a gargle or spray in helping to relieve mouth and throat irritations.

OFTEN some little courtesy or helpful suggestion goes a long way toward building the esteem of patients for the services you render. Take, for instance, the suggestion of a good dentifrice and an efficient toothbrush for home use.

We are confident that you will be "doing the right thing" when you suggest the use of Squibb Dental Cream and the Squibb Angle Toothbrush. Once your patients have experienced the cool, clean, refreshed feeling that comes when they use Squibb Dental Cream . . . once they've seen how easily and effectively the Squibb Angle Toothbrush gets at hard-to-reach places in the mouth . . . they'll want to use both regularly.

For literature on Squibb Products for the Dentist, write Dental Department, 745 Fifth Avenue, New York.

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The New CC TRIMMER
Patented



1 B, 2 B, 3 B - 40¢ ea.
Six - \$2.25; Twelve - \$4.00
2 A - 35¢ ea. Six - \$2.00
(Actual size shown)

**Does Not Scratch Porcelain
Yet Cuts All Denture Materials**

The new CC Trimmers are indispensable tools for laboratory technicians and dentists. They excel other devices in that they trim and festoon dentures without scratching or marring teeth. They cut acrylics and rubber equally well and are especially good for finishing gold and alloys.

CC Trimmers are made in three handy sizes, each mounted on a stout mandrel to fit a chuck or handpiece. A new design mandrel prevents loosening of the abrasive.

CC Trimmers are long wearing and economical. They can be cleaned or shape altered by using an old file or abrasive stone.



The CC TRIMMER (No. 3B shown with handpiece) trims smoothly and quickly — no danger to the porcelain if the finger slips.

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Order all four CC TRIMMER sizes from your dental dealer. See prices above.

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smear under their arms to keep from smelling like goats!

Tighten Up the Belt . . .

Maybe we are spoiled and soft. Maybe we have had life too easy. Maybe we need to set ourselves for some sacrifices and some privation. All we have had to do is turn to the telephone, order a bottle of dental cement, for example, and before long a big truck would wheel up in front of the office and make the delivery. We have been used to stepping into out-of-the-way restaurants and demanding and expecting exotic foods: oysters in the restaurants in the desert and fresh strawberries in a Minnesota winter. We felt that merely to have the ability to buy something was all-important. If we had the money, we felt it was our affair whether we had one car or six. We threw the money away on wasteful living and we were generally extravagant. We are finding now that wastefulness is an offense and is unpatriotic; it is against national security. We are finding now that merely having the ability to buy is not synonymous with the buying.

Let us take a look at our own field: We have been used to competition among dental supply men and manufacturers with their efficient and prompt services. We have had merely to step to the telephone, order what we wanted in any amount or quantity—all the dental alloys or cements or instruments that our pocketbook or credit could afford, and presto, we had delivery, and if it wasn't presto, if the deliveryman did not appear almost out of thin air, we questioned the service of the supply house. Companies tried to out-do one another in getting there fastest with their products. Now we are finding that dental alloys and cements contain metals necessary for national defense; that the steel in instruments is being used for armaments; that cotton is being deflected to surgical dressings, and that merely having the money to buy these things doesn't necessarily mean that they are going to be delivered.

Outside the field of dentistry we are impressed with the personal restrictions on automobile tires. In the past, we changed tires whenever fancy moved or we fell upon a particularly convincing sales person. We said, "These are

Suggestions for the use of

The Ryan Examination and Treatment Record

OVER
125,000

CHARTS
NOW IN USE
BY DENTISTS
EVERYWHERE

TYPES OF PENCILS

Yellow.....	Mongol No. 867
Gray.....	Mongol No. 819
Red.....	Mongol No. 866
Blue.....	Mongol No. 865
Yellow.....	Castell No. 40
Gray.....	Castell No. 57

Mongol pencils are made by Eberhard Faber;
Castell by A. W. Faber.

SUGGESTED SYMBOLS

Each dentist may develop his own system of symbols but the following specific markings have been found simple and adequate:

Soft Lead Pencil—(a) Porcelain fillings are indicated by a pencil outline.

(b) Porcelain jacket crowns and bridges are shown by cross-hatching with lead pencil across the corresponding tooth or teeth on the chart.

(c) Missing teeth are blocked out with a soft lead pencil.

(d) Abrasions are represented with a soft lead pencil.

Blue Pencil—(a) Cavities are indicated with blue pencil.

(b) Advisable restorations are demonstrated with blue pencil.

Red Pencil—(a) A red line is used to indicate the presence of a root canal filling.

(b) A red outline shows the presence and position of an impacted tooth.

(c) Red pencil is used to represent pulp involvement.

(d) A red "X" is made across a tooth to indicate that its extraction has been advised.

(e) Pyorrhea pockets are represented in red along the crest of the alveolar ridge (and a notation is made at the bottom of the chart if extensive gingivitis is present).

1. The Ryan Examination and Treatment Record may be had in pads of fifty charts each. These pads fit conveniently in a standard 9½ by 11½ inch loose-leaf notebook which may be purchased at a five-and-ten cent or variety store.

2. Alphabetical dividers may be made by using a ten cent package of plain white paper of the same size as the charts with holes punched at the same distances, and a fifteen cent box of alphabetical index tabs. The holes are reinforced.

3. It is a good plan to keep a blank sheet of paper between the charts to prevent possible smearing of crayon or pencil markings; but this is not essential.

4. A fresh pad of charts may be kept ready for use in back of the notebook of active records.

5. The various types of restorations and their location in a particular mouth are shown with the use of polychrome pencils—gray, for amalgam; deep yellow, for gold. White pencil does not show up very well; consequently, porcelain may be indicated with soft lead pencil outlines or cross-hatching.

6. Spaces provided beside the quadrants with numbers corresponding to the teeth permit special notations concerning each tooth. As treatment progresses the blue markings indicating needed dentistry are erased, and the nature, location, and date of placement of each new restoration are recorded. Additional clinical notations are made if necessary in the space provided for that purpose below the chart itself.

7. It is essential to be consistent in any system of symbols or markings developed. To insure consistency, it is well to have a key page in the front of the notebook.

8. The exact record of conditions found in the average patient's mouth at the original examination can be completed in fifteen or twenty minutes, and the time it takes to keep a chart up to date is negligible.

9. When a chart is completed the necessary data (name, address, telephone, reference, estimate, and terms) are typewritten in the spaces provided at the top of the record. The date of the original examination is also recorded in order that the treatment dates (as shown in the quadrants at the sides of the chart) will be recognized as subsequent to the date of the original examination.

10. Provision is made on the back of the chart for bookkeeping records. This is merely for the convenience of dentists who wish to keep all records together, but may be ignored by dentists who have a satisfactory book-keeping system which they need not discard or do not wish to discard. The Ryan Examination and Treatment Record may be employed as an additional or supplementary record to any established method of record-keeping dentists may have.

11. Although the Ryan Examination and Treatment Record was designed for the dentist's own convenience in his practice, the charts have been found to have a definite informative value in explaining conditions to patients. The charts are also particularly helpful in reporting dental conditions of patients to cooperating physicians.

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Each year patient education plays a more important part in dental practices. Each year more effective and ethical material is available to you—material that tells a definite and convincing story to patients who are slowly but surely realizing the wisdom of regular dental care, and the dangers of neglect.

Your problem of educating the individual patient to a better understanding of the value of systematic dental care can be overcome to a great extent by the constant use of copies of **YOUR TEETH AND YOUR LIFE**. This booklet has had a tremendously enthusiastic reception by dentists throughout the country. It is being used extensively in patient education programs.

YOUR TEETH AND YOUR LIFE can be used in many ways in your program: (1) as a monthly statement enclosure; (2) for reception room use; (3) for dental societies and Parent-Teacher Association groups; (4) for patient distribution upon dismissal; (5) for enclosure with patient recall cards.

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1. DENTAL CONDITIONS



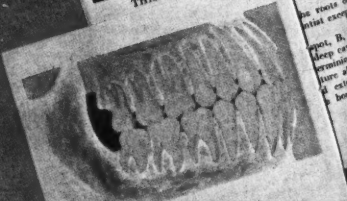
2. THE DANGER FROM THE IMPACTED TOOTH



3. THE PROCESS OF TOOTH DECAY



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4. WHY CONSTRUCT A BRIDGE?

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The charts are being used every day in thousands of dental practices and reorders are being received regularly. If your copy of the complete edition is worn and ragged we suggest you replace it now while the special price is available. If you have never used these charts in your practice you have missed practice building aids of a strictly ethical nature.

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In your ORAL HYGIENE this month



MEET THE GENERAL

This month, you'll find your ORAL HYGIENE as lively and interesting as ever—and, as usual, unlike any other dental journal.

The leading article in January ORAL HYGIENE is in tune with the times. "Meet the General" recounts the career of Brigadier General Leigh C. Fairbank, head of the U. S. Army Dental Corps, an organization in which the profession is taking real pride.

"Markets to Conquer," by Doctor Stanley C. Brown, urges the vigorous promotion of dentistry.

Doctor Howard A. Hartman contributes an unusual four-page portfolio of photographs, which he took at the Houston meeting, of 23 well-known dentists.

Doctor Jack I. Stillerman's "The First to Die" is a moving tribute to Lieutenant Weeden Edward Osborne, Dental Surgeon, U. S. Navy—the first naval officer to die in World War I.

There likely will be plenty of discussion of "Let's Look into This Unionism Business." Doctor William R. Gubbins examines the ideology of the unions from the professional point of view. Maybe you will violently disagree; maybe not.

This month's editorial, "It's Later than We Think," is plain speaking about dentistry's role in what is now *our* war with the Axis.

And, of course, in your January ORAL HYGIENE you'll find the magazine's several popular departments, Ask ORAL HYGIENE, Technique of the Month, Dentists in the News, Military and Defense News, Dear ORAL HYGIENE, Laffodontia—and the Corner.

In your January
Oral Hygiene

our tires; we can run them as long as we please, as short a time as we please, bump them into curbs, ignore the air pressure, do anything we wish. If we want to wear them out early, that is our business." That was our motto.

Some of us have been used to participating in the appalling wastes of so-called banquets where we paid three dollars for a seventy-five cent meal of chicken croquets, peas and mashed potatoes; and tossed money away, sometimes seventy-five cents a shot for drinks that were worth fifteen cents. We lived in this extravagance because we said it was *our* money to spend as we chose. But now we are beginning to learn that we don't possess things singly and as *mine*. United as we are now in a common war effort, we know that for the good of the nation the composite values are more important than the welfare of any particular person. We are mere custodians of what land or what wealth we may have. We should begin to think of holding it for the common welfare. The Indians, in this sense, had the right idea. They said that land could not be sold; that it belonged to all the children of the Great Spirit. We could possess it for a while and use it but it did not *belong* to any person. We may have to get away from possessive expressions: *my* car and *my* house, *my* this and *my* that, and begin to think in terms of *our* things.

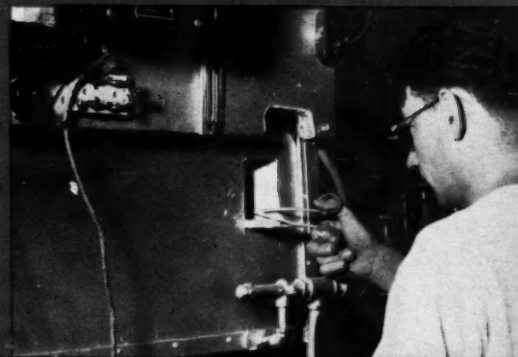
These thoughts may suggest that suddenly I have embraced socialism or communism. Not at all. These are the principles that motivate all collective group action, such as we are in at the moment. Some of the sacrifices that we are going to make: a little less food perhaps, not quite as much gasoline, not such prompt service, and other restrictions not yet imposed—these may toughen our fibers and help us return to the simple neighborly virtues. Despite the hardships, something good may come from our being required to use things together and share our possessions and assets. People traveling to and from work, each in his own automobile, for example, may soon, with the scarcity of tires and automobiles for private use be required to band together to use such resources. By so doing, we may get better acquainted with our fellows and from such associations



Dr. Myerson's Scientific Research—plus

NEW FACILITIES

mean Dentures of Greater Naturalness



ead **WHY MYERSON TEETH DEFY DETECTION**

Myerson

THERE'S MORE TO A DENTURE THAN MEETS THE EYE



At a recent convention, visiting dentists were asked to examine the upper anteriors of a patient. This test was made at a distance of less than 18 inches, and under a strong light. Only 13% were successful in identifying the two artificial Myerson teeth in this partial restoration. Here is conclusive evidence that the pioneering developments of Dr. Myerson have made possible dentures that cannot be detected *even by dentists*.

Such amazing results as this are possible for you at long last because of Dr. Myerson developments. Even a few years ago, the most skillful and painstaking work of dentist and laboratory was unable to produce a denture that would deceive the layman, certainly not a group of experts. Only opaque, china-like teeth were available, and no amount of cleverly placed fillings, stains, and irregularities would take the place of that essential quality of nature's teeth . . . transparency. Dr. Myerson discovered by established optical technics that by the use of a transparent enamel the varied soft and subtle qualities of natural teeth could be duplicated . . . those subtle qualities of light and color in natural teeth that cause us to exclaim: "What beautiful teeth she has!"

But the ultimate reduction of the problem to every day production required years of research in the fields of optics and ceramics. In 1937 Dr. Myerson introduced True-Blend publicly to the profession. The introduction of Myerson teeth at that time created a tremendous stir throughout the profession. The effect, however, in four short years has exceeded all prophesy.

The original True-Blend anteriors were so far superior to all other contemporary teeth that Dr. Myerson might well have been satisfied. Instead, he went back to his laboratory with redoubled enthusiasm to attain even greater perfection in teeth themselves, and in methods of selection and use. The result has been a series of important improvements following one another with surprising rapidity.

The original transparent tooth had been made life-like by the addition of studied irregularities, stains, and erosions.

To this, a new characterization was added to prevent older patients lose something of the surface uniformity of their teeth, and frequently, despite all care, have fillings. For this large group of cases, Dr. Myerson's True-Blend Anteriors provide the solution. They may be made in True-Blend, one, two, or more, in a set of teeth that require. Locations of fillings vary and make no difference in proximate conditions present. Characterization has a remarkable surface variety and contrast. Write for a special offer enabling you to try Characterization Anteriors at no extra cost.

The Myerson developments do not stop at the introduction to the profession. Many factors must enter into the selection of doctors and technicians of a beautiful denture.

Dr. Myerson has recently added remarkable developments to remove the elements of chance or guesswork in the construction. To insure that the artistic sense and ability of dentists finds the fullest expression, a complete description of essential to scientific selection of teeth for use in dentures. Developments are illustrated on the opposite page. For a complete description, write Ideal Tooth Inc.

A shade guide tooth is not sufficient for the selection of six anterior teeth. The only possible method of six teeth actually to be used, so Dr. Myerson has developed life-like methods of carding teeth so they fit immediately in your patient's mouth, just as they came from the factory.

Not to be overlooked is the psychological factor in the patient. Immediate assurance of naturalness in the denture secures you fullest patient cooperation and denture success.

USE THE MYERSON SYSTEM FOR DENTURES OF

Greater naturalness in the use of Dr. Myerson's tooth products is assured by the Myerson System of Immediate oral visualization. This important development in packaging and selection is fully described in the booklet "The Myerson System". Send for your copy today.

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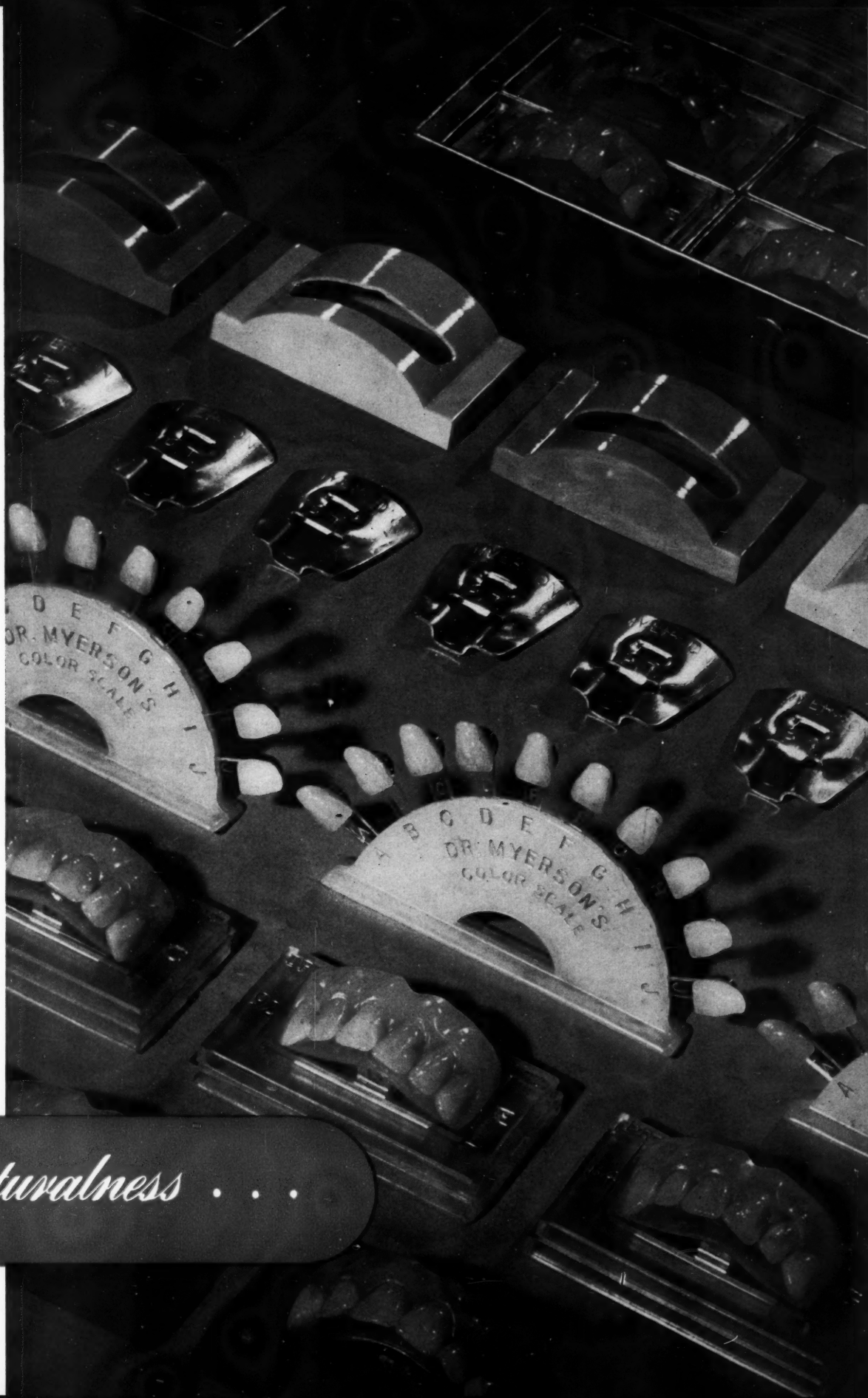
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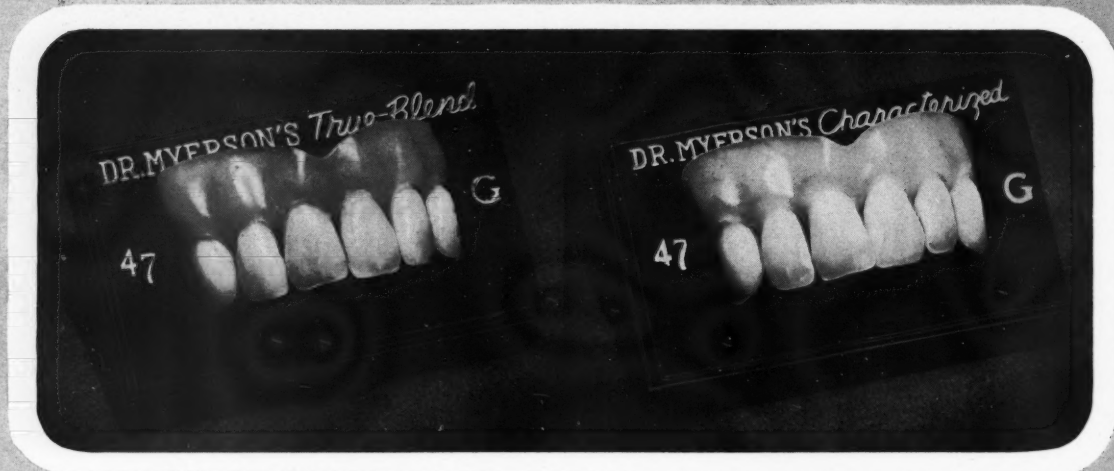
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A SET OF SIX TRUE-BLEND

3 TRUE-BLEND AND 3 CHARACTERIZED
IN ONE SET

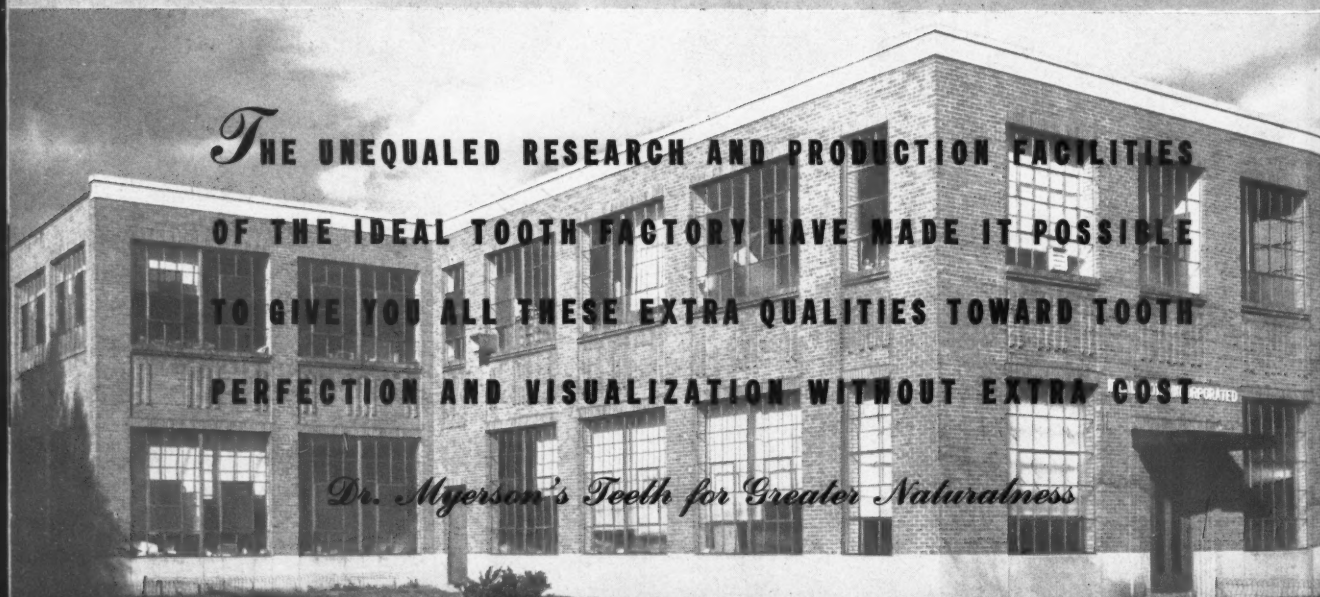
Without extra cost, you may avail yourself of one, two, or even three of Dr. Myerson's Characterized Teeth in a set of six anterior True-Blend. More than merely beautiful simulations of synthetic fillings, Characterized teeth have a remarkable surface texture unknown to other teeth, a marvelously varied tooth surface which deceives even the experts.

Two or more Characterized teeth in a set of Dr. Myerson's True-Blend will make denture detection impossible, even in partial cases. There is no problem of matching partial cases when one or more Characterized teeth are used. Ask your dealer about this new service.

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TO SAVE PAPER

Participating in the paper conservation program, beginning with this issue. THE DENTAL DIGEST has adopted the standard size of *Time* and other popular national magazines.

In standardizing the size of the magazine, it has only been necessary to reduce the page-size by one-quarter inch on all four sides. The area occupied by type and illustrations remains unchanged. Only the margins are affected.

As part of the same program, beginning this month, THE DENTAL DIGEST is using address stickers rather than envelopes — adopting the practice pursued by many national magazines.

develop great and lasting friendships. We dentists may be required to help out our colleagues who are caught short on essential supplies and materials. We may find that "the fellow down the hall" whom we considered a competitor rather than a colleague is in fact a pretty decent sort of chap.

Maybe with some of our enforced privations we will be a healthier and sturdier people. If we have to walk more, we will likely have more buoyant health; if we have to curtail some of the fancy food and drink our gastro-intestinal mechanism will function better; if we can't afford to gad about or prowl around night spots and must stay at home, we may catch up on reading and the art of conversation. The sacrifices that we will have to undergo may indeed be great and good blessings to the nation and to each of us separately.—
E. J. R.

DENTAL MEETING

Dates

Dallas Midwinter Dental Clinic, Hotel Adolphus, Dallas, January 26-28.

Pennsylvania State Dental Society, the Philadelphia County Dental Society, seventy-fourth annual meeting, Benjamin Franklin Hotel, Philadelphia, February 3-6.

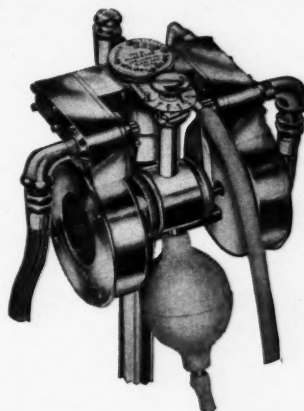
Chicago Dental Society, Midwinter Meeting, Palmer House, Chicago, February 23-26.

Minnesota State Dental Association Meeting, Municipal Auditorium, St. Paul, March 3-5.

Five State Post Graduate Clinic, Mayflower Hotel, Washington, D. C., March 8-12.

Women's Dental Society of New York, Spring Meeting, Hotel Pennsylvania, New York City, March 18.

The Thomas P. Hinman Midwinter Clinic, Biltmore Hotel, Atlanta, March 23-24.



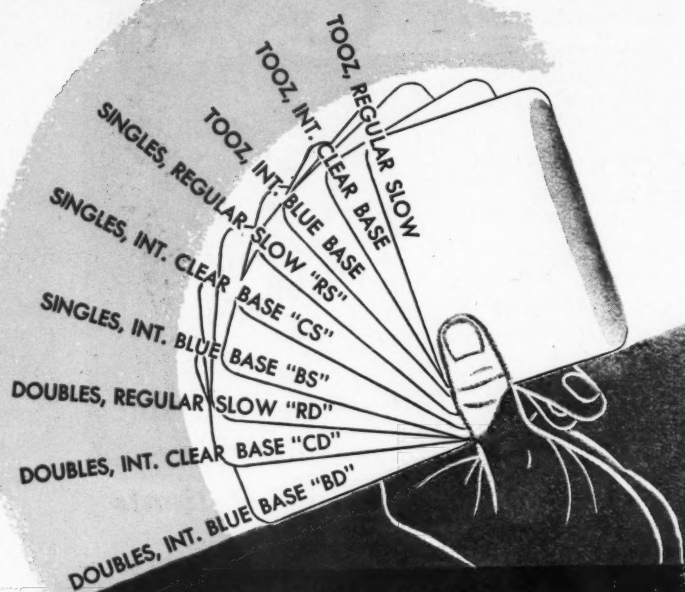
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Classification of the Causes of Bleeding Gums

(Continued from page 27)

A. Blood Dyscrasias (abnormal composition of the blood)

1. Affecting the blood cellular elements:

- a) the leukemias (blood dyscrasias of unknown origin char-

acterized by a permanent increase in the white blood cells)

- b) the anemias (deficiency in the volume of blood or in an important constituent, as the number of red corpuscles or hemoglobin): (1) pernicious (a chronic disease marked by progressive diminution in

number of the red blood corpuscles, with the usual symptoms of anemia and often with emaciation, fever, and hemorrhage into the retina); (2) secondary anemia (an anemia due to hemorrhage or some disease or injury); (3) acute aplastic anemia (a severe anemia due to deficiency in red blood cell formation).

2. Affecting the blood-clotting elements:

- a) the purpuras (skin disorders characterized by purple patches resulting from hemorrhages into the skin, which does not disappear on pressure:

Purpura hemorrhagica (a severe disease characterized by purple discoloration of the skin and mucous membranes, with copious hemorrhages from the mucous membrane and severe constitutional symptoms)

- b) hemophilia (a strong and abnormal tendency to bleeding or hemorrhage, usually hereditary).

B. Changes in the Blood Vessels

1. Scorbutic conditions (diseases of malnutrition caused by an unbalanced diet, particularly a deficiency of foods containing vitamin C):

- a) acute (diseases of malnutrition characterized by subcutaneous and mucous hemorrhages, fetid breath, spongy, bleeding gums, general anemia and debility, and painful contraction of muscles)

- b) chronic or latent scurvy (a long-standing vitamin C deficiency due to low vitamin C ingestion or difficulty in utilization of this vitamin. It is characterized by a tendency to capillary hemorrhage, susceptibility to common infections, loss of appetite and weakness).

2. Arteriosclerosis (a condition marked by the abnormal hardening and thickening of the tissue

coats forming the arterial walls, especially the inner).

3. Protein deficiency (deficiency of protein intake in the diet, characterized by weakness, debility, and low resistance to infections).
4. Allergy (an increased or exaggerated reaction to a substance or agency which is normally harmless).

Focal infection (a term applied to the condition in which a primary source of infection causes disease in some other part of the body. The source, such as pyorrhea pockets, is called a focus of infection).

SECONDARY INTRINSIC FACTORS (INTERNAL PREDISPOSING INFLUENCES)

- A. Faulty Histologic Structure of the Gingival Tissue.
- B. Diabetes Mellitus: a disease of metabolism based on a defect in the body's power to store and oxidize carbohydrates.
- C. Endocrine Disturbances: an upset in the delicate balance of the internal secretions of the body:
 1. pregnancy
 2. vicarious menstruation (a flow of blood from some other part or organ, instead of from the vagina, during the regular menstrual period)
 3. endocrine changes in adolescence
 4. ovarian disturbances (during adolescence, pregnancy, or menopause).
- D. Febrile States: from diseases accompanied by fever.
- E. Toxic States: from diseases producing poisons in the body.
- F. Gastro-Intestinal Disturbances: diseases of the stomach and intestines.

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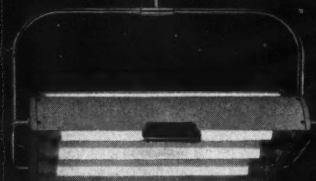
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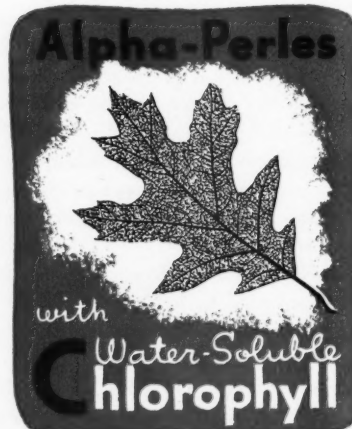
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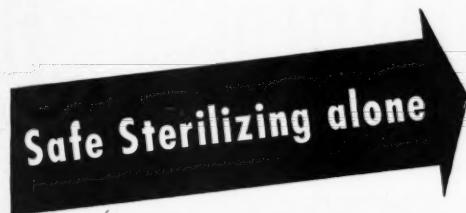
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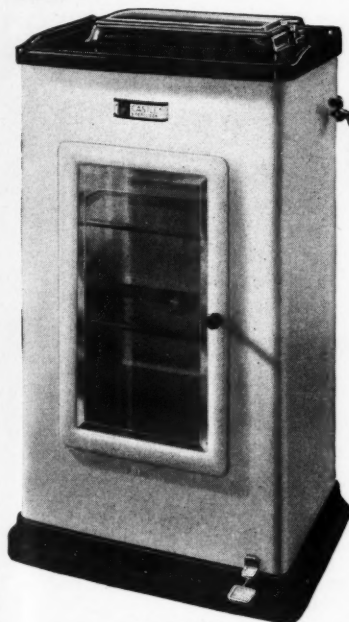
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Surgical and Dental Treatment of Fractures of the Upper and Lower Jaws in War Time

(Continued from page 30)

lower jaw to include the temporomandibular joints, supplemented if necessary by dental roentgenograms. At the same time 30° and 90° occipitomenal views are used to estimate nasal, malar, and maxillary fractures and displacements.

Immediate Treatment of Acute Facial Injuries Complicating Fractured Jaws—The initial treatment of the soft tissue injury differs considerably from that adopted in similar injuries in other parts of the body where radical excision of the injured tissues and removal of all foreign bodies are essential at the earliest possible moment to prevent sepsis and gas gangrene. The good blood supply of the facial tissues and jaws and their well known resistance to infection allow considerably greater latitude, and it cannot be denied that early suture of the soft tissues and immobilization of the jaw fragments will give the best results.

Important Factors

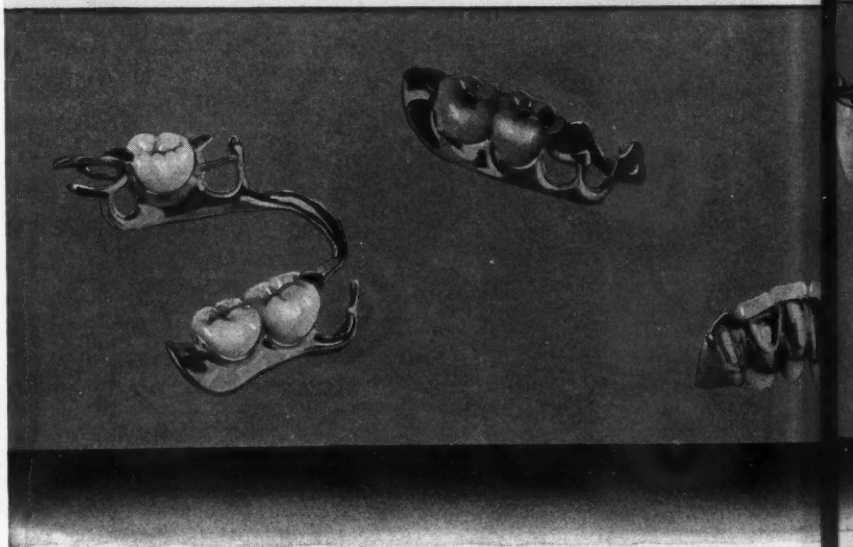
Time Factor—The time factor is important in relation to infection. Within the first twelve hours facial injuries may be sutured with impunity provided great care is taken to cleanse the wounds thoroughly with soap and water and normal salt solution, and to remove thoroughly (with a sharp steel curet if necessary) all foreign bodies and dirt which may have been ground into the tissue. Non-viable pieces of bone only are removed, and extreme conservation is practiced in regard to any pieces that have the slightest chance of survival. Excision of wounds is unnecessary except for the removal of non-viable tissue or to make accurate suture of severely injured skin edges possible. Suture can be performed up to twenty-four hours, but after that it is probably inadvisable, for the risks of sepsis rise steeply. After this time the wounds should be packed open with saline gauze which is changed frequently.

Wound Tension—The mechanical possibility of wound suture largely depends on whether or not tissue has been lost, and the amount of this should be

carefully estimated. If it is such that undesirable tension is produced and especially if the displacement of the fragments is perpetuated or increased, it should not be attempted. It is remarkable how well a facial wound, packed widely open with saline gauze, will heal in the absence of all tension, and how rapidly a breakdown will occur under reverse conditions. Comparatively little scar results from the former procedure, but the subsequent removal of the

marks of badly placed sutures, which have cut in is far from easy. In full thickness losses of the cheeks, including bone, it is better to suture the mucous membrane of the buccal surface to the skin edges round the bone ends in such a way that the bone is protected and the raw surface exposed to infection is reduced to a minimum. Conservative treatment of this type is essential if deformities difficult to cure later are to be prevented.

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Drainage—All compound injuries of the jaws associated with external wound should be adequately drained at whatever time they are seen. Delay in healing is often due to inadequate initial drainage. The drain should be in a dependent position and preferably a rubber tube of sufficiently wide bore to allow frequent irrigation through a catheter into those gunshot wounds of the jaws with small points of entry and exit but severe within the mouth, in

which dependent drainage is not easy. The saline solution is run in from time to time from a thermos flask type of irrigator above the patient's head, controlled by the patient himself.

Treatment of Fractures*

With the completion of the soft tissue suture by the plastic surgeon in those

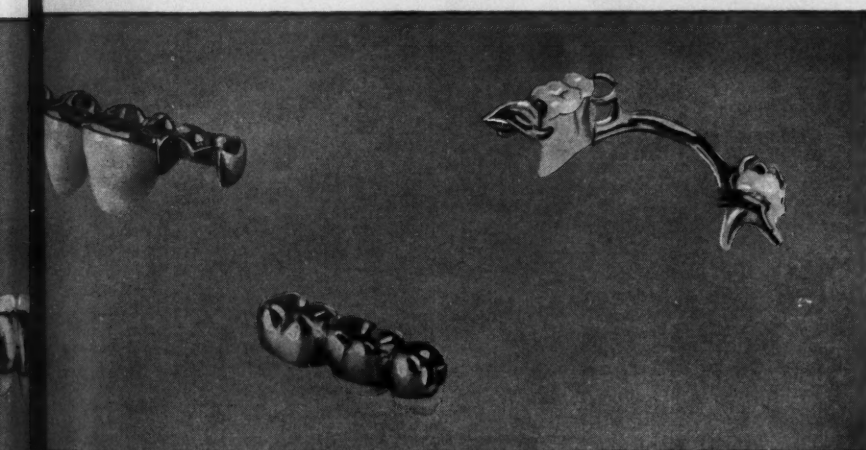
*Editors' Note: In this connection it is suggested that readers refer to the article by Major Roger C. Miller (U.S. Army Dental Corps) on The Construction of Sectional Splints for Maxillary and Mandibular Fractures in The DENTAL DIGEST, 47:252 (June) 1941.

fractures requiring it, the patient is then referred to the dental surgeon. The ideals to be aimed at are the permanent immobilization of the fragments and the clearing up of sepsis in the fracture lines. It is unnecessary to describe here first-aid methods of treatment which a special center of this nature would rarely employ, though it might be said that cases have many times been admitted so efficiently immobilized by eyelet or other wiring methods that it has been unnecessary to make any alterations. A survey of the types of treatment used in the Unit would show that cast metal cap splints have proved the most satisfactory form of immobilization and are used in the vast majority of cases (71 per cent.).

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